Bushfire Risk Management Plan 2023-2028

Perenjori

Embrace Opportunity

Office of Bushfire Risk Management – Bushfire Risk Management Plan reviewed 17 April 2023
Shire of Perenjori Council BRM Plan endorsement 18 May 2023

Contents

Document Control

Document Name	Bushfire Risk Management Plan	Current Version	Final Draft
Document Owner	Shire of Perenjori Chief Executive Officer	Issue Date	17 April 2023
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Document Endorsements

The Shire of Perenjori Council endorses that the Bushfire Risk Management Plan (BRM Plan) has been reviewed and assessed by the Office of Bushfire Risk Management as consistent with the standard for bushfire risk management planning in Western Australia, the *'Guidelines for Preparing a Bushfire Risk Management Plan'*.

The Shire of Perenjori is the owner of this document and has responsibility, as far as is reasonable, to manage the implementation of the BRM Plan and facilitate the implementation of bushfire risk management treatments by risk owners. The approval of the BRM Plan by the Shire of Perenjori Council satisfies their endorsement obligations under State Hazard Plan – Fire.

Local Government	Representative	Signature	Date
Shire of Perenjori	Cr Chris King	Chris King Chris King (May 26, 2023 11:22 GMT+8)	18 May 2023

Amendment List

Version	Date	Author	Section
Draft v1	February 2022	Donna Walker	Initial Draft
Final Draft	March 2023	Donna Walker	Amendments following OBRM Q&A

Publication Information

Disclaimer

In approving this BRM Plan, the Shire of Perenjori Council is acknowledging the assets that have been identified within their local community and the risk ratings and treatment priorities assigned. Approval of the plan is a commitment by the Shire of Perenjori to work with landowners and managers to address unacceptable risk within the community. Endorsement of this plan is not an acceptance of responsibility or commitment by the Shire of Perenjori to treat risks occurring on land that is not owned or managed by the Shire.[1]

[1] Guidelines for Preparing a Bushfire Risk Management Plan. November 2020. Page 44

1. Introduction

1.1. Background

Under the *State Hazard Plan - Fire* an integrated Bushfire Risk Management (BRM) Plan is to be developed for local government areas with significant bushfire risk. This BRM Plan has been prepared for the Shire of Perenjori in accordance with the requirements of the '*Guidelines for Preparing a Bushfire Risk Management Plan'* (the Guidelines) from the Office of Bushfire Risk Management (OBRM) within the Department of Fire and Emergency Services (DFES). The risk management processes used to develop this BRM Plan are aligned to the key principles of *AS/NZS ISO 31000:2009 Risk Management – Principles and Guidelines* and those described in the National Emergency Risk Assessment Guidelines. This approach is consistent with State Emergency Management (SEM) Policy and SEM Prevention Mitigation Procedure 1.

This BRM Plan is a strategic document that facilitates a coordinated approach towards the identification, assessment and treatment of assets exposed to bushfire risk. The Treatment Schedule sets out a broad program of coordinated multi-agency treatments to address risks identified in the BRM Plan. Government agencies and other land managers responsible for implementing treatments participate in developing the BRM Plan and Treatment Schedule to ensure treatment strategies are collaborative and efficient, regardless of land tenure.

1.2. Aim and Objectives

The aim of the BRM Plan is to effectively manage bushfire risk in order to protect people, assets and other things of local value in the Shire of Perenjori. The objectives of this BRM Plan are to:

- Guide and coordinate a tenure blind, multi-agency BRM program over a five-year period;
- Document the process used to identify, analyse and evaluate risk, determine priorities and develop a plan to systematically treat risk;
- Facilitate the effective use of the financial and physical resources available for BRM activities;
- Integrate BRM into the business processes of local government, landowners and other agencies;
- Ensure there is integration between landowners, BRM programs and activities; and
- Document processes used to monitor and review the implementation of treatment plans to ensure they are adaptable and that risk is managed at an acceptable level.

1.3. Legislation, Policy and Standards

The following legislation, policy and standards were considered to be applicable in the development and implementation of the BRM Plan.

1.3.1. Legislation and Policy

- *Aboriginal Heritage Act 1972*
- *Aboriginal Cultural Heritage Act 2021*
- *Biodiversity Conservation Act 2016*
- *Building Act 2011*
- *Bush Fires Act 1954*
- *Conservation and Land Management Act 1984*
- *Country Areas Water Supply Act 1947*
- *Emergency Management Act 2005*
- *Environmental Protection Act 1986*
- *Environmental Protection and Biodiversity Conservation Act 1999 (Cth)*
- *Fire Brigades Act 1942*
- *Fire and Emergency Service Act 1998*
- *Metropolitan Water Supply, Sewerage and Drainage Act 1909*
- *National Trust of Australia (WA) Act 1964*
- *Native Title Act 1993*
- *Bush Fires Regulations 1954*
- *Emergency Management Regulations 2006*
- *Planning and Development (Local Planning Scheme) Regulations 2015*
- *SEM Plan (State Emergency Management Committee (SEMC) 2022)*
- *SEM Policy (SEMC 2022)*
- *SEM Procedure 1 (SEMC 2022)*
- *State Hazard Plan - Fire (SEMC 2022)*
- *State Planning Policy 3.4: Natural Hazards and Disasters Western Australian Planning Commission (WAPC 2016)*
- *State Planning Policy 3.7: Planning in Bushfire Prone Areas (WAPC 2015, as amended)*

1.3.2. Other Related Documents

- A Capability Roadmap: Enhancing Emergency Management in Australia 2016 (Australasian Fire and Emergency Services Authorities Council 2016)
- A Guide to Constructing and Maintaining Fire Breaks (DFES 2018)
- AS 3959-2009 Construction of Buildings in Bushfire-Prone Areas (Standards Australia 2009)

- AS/NZS ISO 31000:2009 - Risk Management – Principles and Guidelines (Standards Australia 2009)
- Australian Disaster Resilience Handbook 10: National Emergency Risk Assessment Guidelines (Australian Institute for Disaster Resilience 2015)
- Bushfire Risk Management Planning Handbook (DFES 2018)
- Code of Practice for Timber Plantations in Western Australia (Forest Products Commission (FPC) 2006)
- Guidelines for Preparing a Bushfire Risk Management Plan 2020 (DFES 2020)
- Guidelines for Planning in Bushfire Prone Areas (WAPC 2017)
- Guidelines for Plantation Fire Protection (DFES 2011)
- National Disaster Risk Reduction Framework (Department of Home Affairs 2018)
- National Strategy for Disaster Resilience (Attorney-General's Department 2011)
- Public Service Circular No. 88 use of Herbicides in Water Catchment Areas (Department of Health 2007)
- Western Australian Emergency Risk Management Guide (SEMC 2015)

1.3.3. Shire of Perenjori Related Documents

- Asset Management Plan 2012
- Community Strategic Plan and Corporate Business Plan 2022/23-2032/33
- Information Guide and Firebreak Notice (annual notice)
- Local Emergency Management Arrangements 2018
- Local Laws 2000
- Local Planning Scheme No. 2
- Local Recovery Plan 2018
- Municipal Inventory of Heritage Places
- Policy Manual 2021
- Workforce and Diversity Plan 2019 – 2023

2. The Risk Management Process

The risk management processes used to identify and address risk in this BRM Plan are aligned with the international standard for risk management, *AS/NZS ISO 31000:2009 Risk Management – Principles and Guidelines.* This process is outlined in Figure 1.

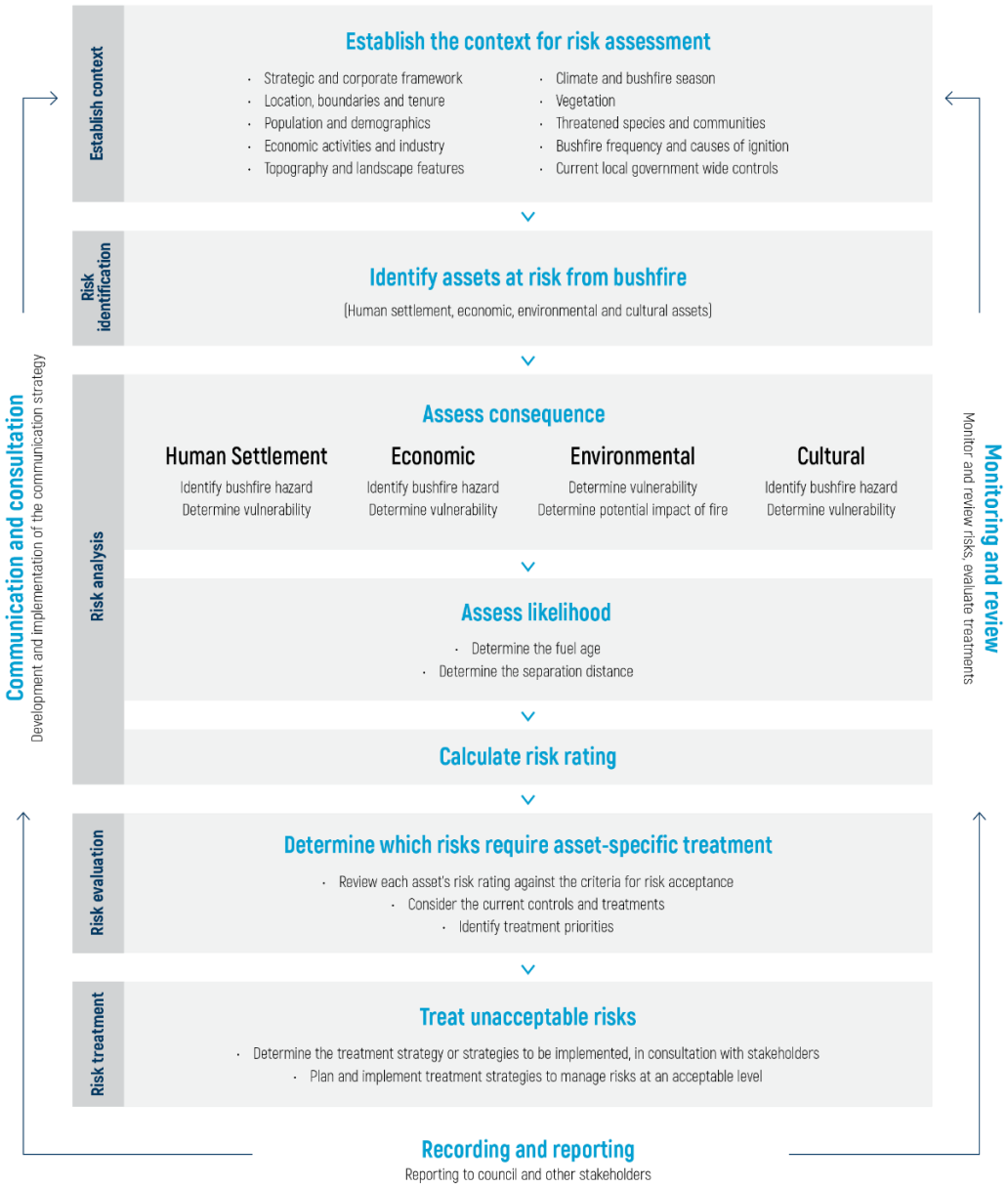


Figure 1 - An overview of the risk management process[2]

[2] Adapted from: AS/NZS ISO 31000:2009, with permission from SAI Global under Licence 1210-c081.

2.1. Roles and Responsibilities

The roles and responsibilities of the key stakeholders involved in the development of the BRM Plan are outlined in Table 1.

Table 1 – Roles and Responsibilities

Stakeholder Name	Roles and Responsibilities
Local Government	• Custodian of the Bushfire Risk Management Plan (BRM Plan) • Coordinate the development and ongoing review of the integrated BRM Plan • Negotiate a commitment from landowners to treat risks identified in the BRM Plan • Undertake treatments on lands owned or managed by them • Submit the draft BRM Plan to DFES's Office of Bushfire Risk Management (OBRM) for review and endorsement • Submission of the OBRM endorsed BRM Plan to council for their approval and adoption.
Department of Fire and Emergency Services	• Participate in and contribute to the development and implementation of BRM Plans • Support to local government through expert knowledge and advice in relation to the identification, prevention and treatment of bushfire risk • Facilitate local government engagement with state and federal government agencies in the local planning process • Undertake treatments on Unmanaged Reserves and Unallocated Crown Land within gazetted town site boundaries • In accordance with Memorandums of Understanding and other agreements, implement treatment strategies for other landowners • Review BRM Plans for consistency with the Guidelines prior to final approval by council • Administer and coordinate the Mitigation Activity Fund Grants Program.
Department of Biodiversity, Conservation and Attractions	• Participate in and contribute to the development and implementation of BRM Plans • Provide advice for the identification of environmental assets that are vulnerable to fire and planning appropriate treatment strategies for their protection • Undertake treatments on department managed land, and Unmanaged Reserves and Unallocated Crown Land outside gazetted town site boundaries and land in which they have an agreement for.

Stakeholder Name	Roles and Responsibilities
Forest Products Commission	• Participate in and contribute to the development and implementation of BRM Plans • Provide information about their assets and current risk treatment programs • Undertake treatments on lands owned or managed by them.
Department of Planning, Lands and Heritage	• Provide advice for the identification of their assets and infrastructure, specifically Aboriginal and European heritage.
Other State and Federal Government Agencies and Public Utilities	• Provide information about their assets and current risk treatment programs • Participate in and contribute to the development and implementation of BRM Plans • Undertake treatments on lands they manage.
Corporations and Private Landowners	• Provide information about their assets and current risk treatment programs.

2.2. Communication and Consultation

Communication and consultation throughout the risk management process is fundamental to the development, implementation and review of the BRM Plan. To ensure appropriate and effective communication occurred with relevant stakeholders at each stage of the BRM planning process, a Communication Strategy was prepared **(Appendix 1)**.

3. Establishing the Context

3.1. Description of the Local Government and Community Context

The name Perenjori is derived from the Aboriginal word “Perangary”, meaning water hole. Sir John Forrest conducted exploration and surveyed the area in 1869 but it was not until gold was discovered at Rothsay in 1894 that led to settlement in the district. The first crops were grown around 1911 and were planted and harvested by hand. Several years later, once the Government Railway through Wubin, Perenjori and Morawa was built and officially opened in 1915, the district began to prosper.

The Shire of Perenjori is a local government area in the Mid-West region of Western Australia. The Perenjori Road Board was established following a rezoning of the Perenjori-Morawa Road District. On 1 July 1961, the Perenjori Road Board became the Shire of Perenjori. The Council consists of seven elected members that reflect the scope of the community. Today, the Shire of Perenjori is one of the largest agricultural shires in WA, with a combination of farming, pastoral and mining leases. It has strong connections with the community and a desire for growth and renewed vitality to support local businesses, tourism and population attraction.

3.1.1. Strategic and Corporate Framework

The Shire’s *Strategic Community Plan and Corporate Business Plan 2022/23-2032/33* is the key planning document detailing the vision for the future and encapsulating ideas for the future of the community. The Strategic Community Plan sets the scene, showing the long-term vision, priorities, objectives and strategies for change. This BRM Plan has been developed to effectively plan for the mitigation of bushfire risk and support the Shire to achieve its vision for the community.

Vision

Our community is strong and growing.

We create our own future with imagination and energy.

We are proud of this place we call home and welcome visitors to share in its outstanding natural beauty.

Goals

- Social
- Built and Natural Environment
- Economic
- Governance and Leadership

This BRM Plan aims to strengthen the Shire's capacity to achieve its overall corporate vision and goals as detailed in the Strategic Community Plan and Corporate Business Plan 2022/23-2032/33. The key objectives and strategies elements that link with bushfire risk planning are outlined in Table 2.

Table 2 – Linkages of the Strategic and Corporate Framework to Bushfire Risk Planning

Strategic Plan Element	Link to BRM Planning
Goal 1 - Social: **An inclusive community and a great place to live for all ages and stages of life** Strategic Objective 1.2: Community life is enhanced and nurtured with well supported clubs, community groups, and essential volunteer-based services Outputs ▪ Ensure local leaders are trained, mentored and supported Strategic Objective 1.9: Emergency management and associated community liaison and education activities are undertaken to protect the community and minimize harm from disasters Outputs ▪ Support DFES, St Johns and Roadwise Committee to continue services to Emergency Management ▪ Bushfire prevention activities and education ▪ Disaster management and recovery	▪ Implementation of the plan will provide opportunities for brigades and volunteers to develop and extend skills in fire management and mitigation activities. ▪ Volunteer brigades are engaged and valued in the planning and undertaking of mitigation works in their brigade areas using local knowledge and experience ▪ Volunteer groups and fire brigades are used as a key source of information and input into bushfire management planning. ▪ The BRM Plan will assist with identifying areas of high risk to the community ▪ BRM Planning and implementation is integral to the management of bushfire risk. The BRM Plan will be linked with existing structures such as the Local Emergency Management Committee (LEMC) and Bush Fire Advisory committee (BFAC)

Strategic Plan Element	Link to BRM Planning
Goal 2 – Built and Natural Environment: **Eco-friendly, attractive and well-maintained towns, surrounded by outstanding natural beauty, landscapes, flora and fauna to be protected and enjoyed** Strategic Objective 2.7: Parks, gardens, street trees and reserves are appropriately managed according to their need and use Outputs ▪ Parks, ovals and gardens	▪ Mitigation works are undertaken to reduce fuel loads in natural areas, parks and reserves to ensure community safety
Goal 4 – Governance and Leadership **A strong and diverse Council working closely with the proactive and involved community** Strategic Objective 4.1: The community is well-informed and engaged Output ▪ Regular communications to the community using social media, newsletters and website	▪ Safe visitation, managing ignitions, communication education around high risk periods and uses

The BRM Plan is a hazard specific plan with a primary objective to reduce unacceptable bushfire risks and facilitate the safe and perpetual development of the Shire into the future. The BRM Plan identifies assets within the Shire exposed to significant bushfire risk and aims to reduce the potential impacts from bushfire across all land tenures within the Shire. This will be facilitated using prudent planning and coordinated land treatment strategies. The application of treatment strategies will be across community assets that are exposed to bushfire risk. The treatments when implemented, will reduce the potential loss and damage resulting from bushfires and help protect human life and local assets within the Shire.

The Shire recognises the importance of leadership and coordination in emergency management, as demonstrated through their Local Emergency Management Arrangements which highlights the multi-agency approach to emergency management across the Shire.

The Shire's LEMC has undertaken the emergency risk management process to identify risks most likely to threaten the safety and well-being of the community and environments within the Shire of Perenjori. Bushfire is continually being identified as one of the highest risks to the community's residents, their farms and their economy. The community is very risk aware when it comes to bushfire particularly when crops are at their peak prior to and during harvesting periods.

The LEMC provides an important forum for the BRM Plan to consult and support the development of the BRM Plan as a tenure blind, strategic document.

The Shire's LEMC and BFAC are identified as key stakeholders in the development, implementation and review of the BRM Plan. Their input and advice are critical to the bushfire risk management process and will provide an important forum for consultation, joint-agency partnerships and the resolution of local issues. The BRM Plan will assist by improving community awareness of bushfire risk and treatment activities planned in their area. Identification of treatment priorities will assist with forward planning and budgeting for treatment activities within the local government area. Along with enabling the Shire to access additional external funding opportunities provided via state government programs, such as the Mitigation Activity Fund Grants Program. Bushfire risk management has primarily been focussed on the response and recovery from bushfires however, there has been a gradual change in recent years to a risk management approach that also includes bushfire prevention and preparedness activities.

The prevention and preparedness treatment strategies currently employed to reduce the bushfire risk within the Shire include:

- reducing fuel loads through annual works programs
- proactively addressing risk identified on Shire managed land; and
- controlled burns on Shire managed reserves where appropriate.

These treatment strategies are managed within their budgetary and human resource constraints. Ultimately, the Shire's Chief Executive Officer (CEO) is responsible for the BRM Plan process, sustainability and continuity, nothing that the CEO can delegate all or some of these responsibilities. However, with limited interna resources available for BRM planning, the ongoing sustainability of the BRM Plan will rely on the Shire pursuing opportunities to access external support from state government or partner with other stakeholders. There are multiple stakeholders involved in the effective implementation of the BRM Plan, the Shire's responsibility is to address the risk within its scope, using the resources available and facilitate the management of bushfire risk in the wider community, which may involve officers across the Shire's departments, as outlined in Figure 2.

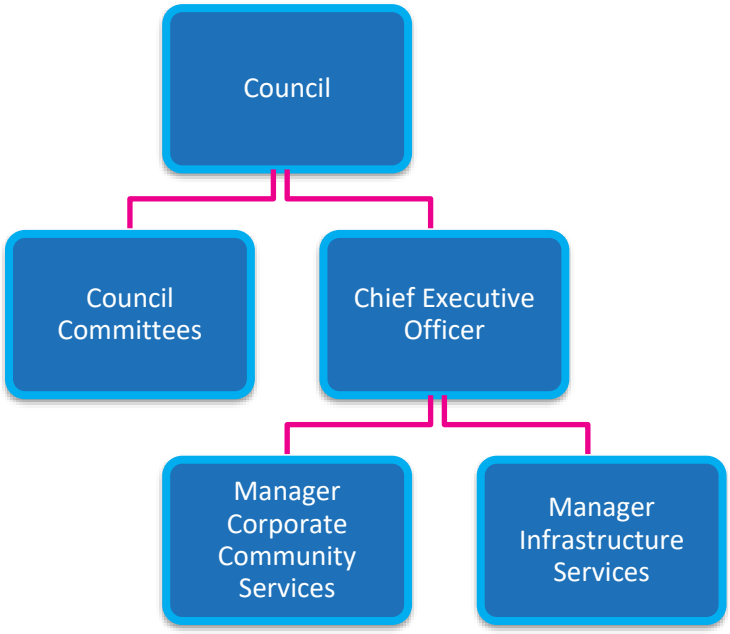


Figure 2 – Shire of Perenjori organisational structure

The Shire has access to the services of a Community Emergency Services Manager (CESM). This position is shared across neighbouring local governments being the Shires of Morawa, Murchison and Yalgoo and is supported by the DFES, managed by a Memorandum of Understanding. The CESM position will have a supporting role throughout the implementation, monitoring and review phases of this BRM Plan, particularly in relation to the Shire's mitigation program. This position has strong support from the emergency services volunteers, including advice from the Chief Bushfire Control Officer, BFAC and LEMC when determining bushfire risk, treatment strategies and priorities.

However, given the changing priorities, funding limitations and political landscape, the current arrangements supporting the CESM position may be subject to change in the future. Should this position not continue, the CESM responsibilities will be allocated to another officer within the Shire that is tasked with responsibilities for emergency management, noting however, that the capability of the Shire will be reduced overall, as there would no longer be a dedicated resource available to support these functions.

3.1.2. Location, Boundaries and Tenure

Located within the North Midlands sub-region, the Shire of Perenjori is approximately 354km north of Perth and forms part of the broader Mid-West Region. The Shire is bordered by:

- Shire of Three Springs, Shire of Carnamah and Shire of Coorow to the west;
- Shire of Yalgoo to the east;
- Shire of Morawa to the north; and
- Shire of Dalwallinu to the south.

Perenjori is a rural district based on agriculture and mining industries. It is also one of nine local government areas that make up WA's Wildflower Country. Covering a total area of approximately 8,611km^2, the Shire encompasses the localities of Bowgada, Bunjil, Latham, Maya, Perenjori and Rothsay.

With the exception of Rothsay, all the localities within the Shire originated from being identified as appropriate sites for a townsite to service the railway sidings located along the railway line between Wongan Hills and Mullewa. The railway opened for service in 1915 and the towns of Bowgada, Bunjil, Canon, Latham, Maya and Perenjori were gazetted soon after. Settlement began in these towns with some establishing schools, halls, sporting facilities, post offices and general stores to support the growing population and vibrant community spirit. Cropping and stock were the two main industries, however over time, the populations got smaller resulting in the closing down of schools and stores.

Today, the town of Perenjori is where the majority of the Shire's population is located. Facilities include the Shire's administration centre, primary school, local café, police station, volunteer bush fire brigade, hotel, caravan park, 18-hole golf course, community centre and swimming pool. The town also boasts St Joseph's Church, one of the many churches designed by architect-priest Monsignor John Hawes.

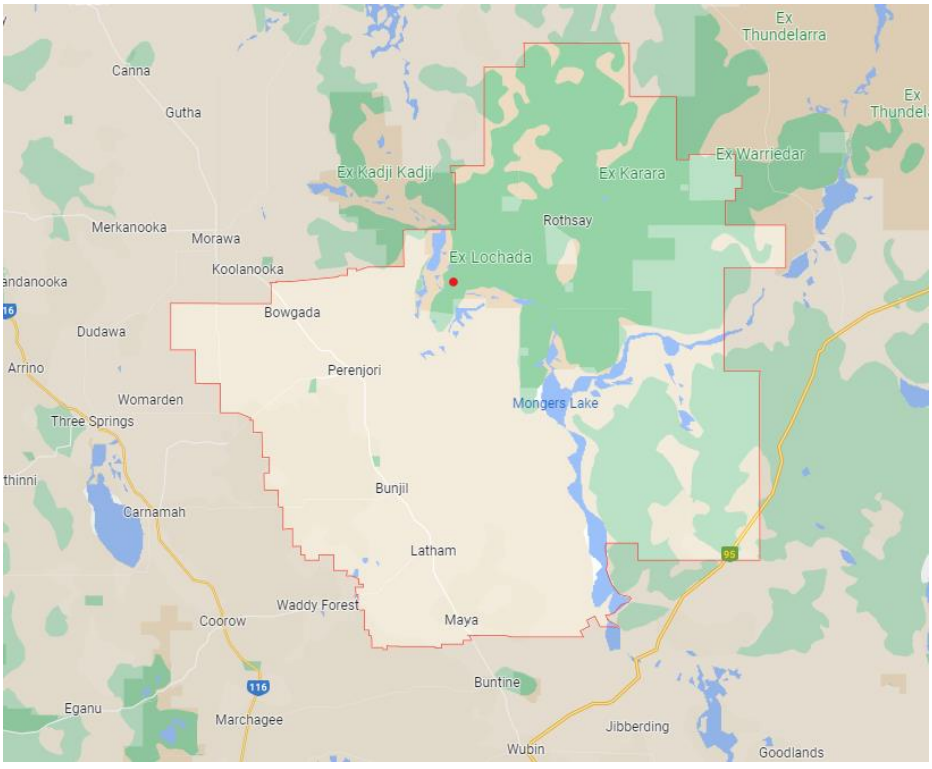


Figure 3 – Shire of Perenjori boundary map

The Shire of Perenjori is located in the northern portion of the Avon Wheatbelt region and a significant portion of its land is used for agricultural activities. This requires a significant management resource during fire season to mitigate the escape of crop burning.

This can be a challenge as many of the local volunteers are also farmers who are harvesting during this time. The high proportion of agricultural activities mean that there are large areas of continuous farming land that can carry large fires. Much of this land is mixed agriculture with patches of native vegetation.

Beyond the farming belt to the east of the Shire, much of the land is made up of pastoral leases, Unallocated Crown Land (UCL) or areas of conservation. The Department of Biodiversity, Conservation and Attractions (DBCA) is responsible for the management of natural reserves, National Parks and State Forests.

There are ten conservation reserves in the Shire covering a total area of over 1.1 million hectares that is currently being managed by DBCA. These areas of conservation are listed in Table 3.

Table 3 – DBCA managed conservation tenure within the Shire of Perenjori3

Reserve Number	Reserve Tenure	Reserve Name
R 14296	A Class Nature Reserve	Unnamed Reserve
R 14297	A Class Nature Reserve	Unnamed Reserve
R 14566	A Class Nature Reserve	East Latham Nature Reserve
R 26798	A Class Nature Reserve	Caron Nature Reserve
R 26819	A Class Nature Reserve	West Perenjori Nature Reserve
R 28755	A Class Nature Reserve	Unnamed Reserve
R 29745	A Class Nature Reserve	Bowgada Nature Reserve
R 29807	A Class Nature Reserve	Unnamed Reserve
R 53971	C Class Nature Reserve	Unnamed Reserve
R 53978	A Class Nature Reserve	Unnamed Reserve

The Shire is the land and treatment manager for those reserves under its care, control and management, which is a combination of private freehold and Crown land. There are 42 reserves vested in the Shire of Perenjori which are made up of remnant vegetation, community orientated services such as drainage, waterways, emergency services sites, public open spaces and recreational purposes. These reserves total approximately 1,473ha vested with the Shire of Perenjori which places considerable pressure on local government and its rate payers to adequately maintain bushfire strategic mitigation strategies without additional resources, both financially and capability based.

[3] Landgate tenure data

Approximately 67% of the Shire is private freehold land, comprising of a number of individual landowners with varying levels of understanding of bushfire risk, with different values, attitudes and beliefs. This can present a challenge to the Shire to ensure that communications regarding bushfire risk management are timely, effective and targeted. An overview of the land tenure and management within the Shire is shown in Table 4.

Table 4 – Overview of Land Tenure and Management within the BRM Plan Area[4]

Land Manager/Agency	Percentage of Local Government Area
Local Government	6.6%
Private	67.5%
Department of Biodiversity, Conservation and Attractions	1.2%
Department of Planning, Lands and Heritage	5.6%
Unallocated Crown Land/Unmanaged Reserves	13.6%
Other*	5.5%
Total	100%

*Tenure is made up of Other State Govt, Utilities and excludes roads and railways.

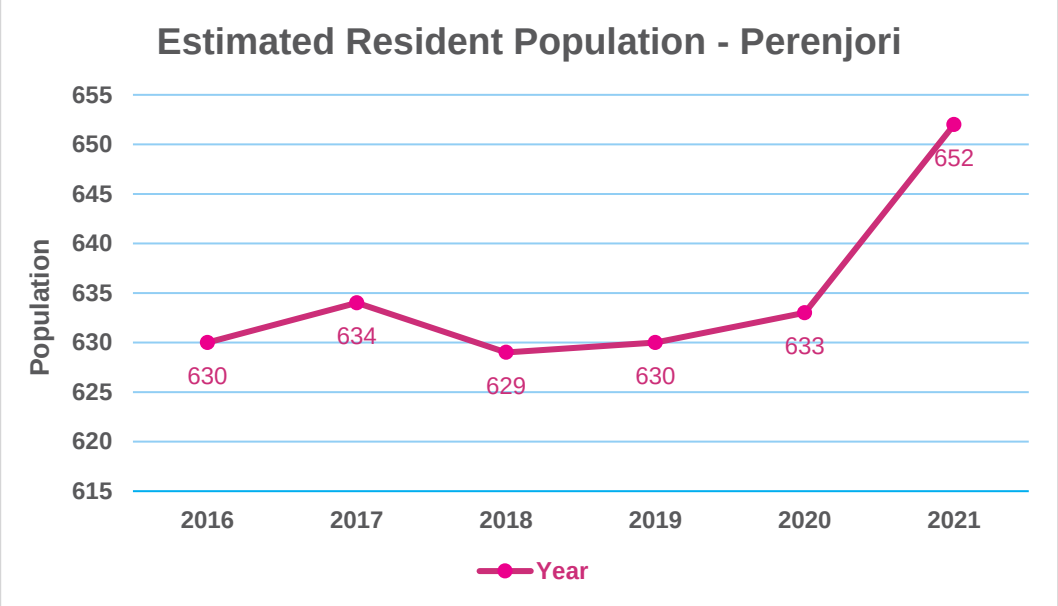
The Shire includes 243km of sealed roads and 1000km of unsealed roads which equates to approximately 29.9% of the total area. The Shire is responsible for the maintenance and management of minor roads throughout, including unsealed roads and accessways. Main arterial roads and routes are managed by Main Roads. The Shire will use the BRM Plan to highlight risks to both private and public landowners and managers and support them to undertake appropriate mitigation works where possible.

3.1.3. Population and Demographics

The most comprehensive population count available in Australia is derived from the Population and Household Census conducted every 5 years by the Australian Bureau of Statistics. This population figure includes overseas visitors but excludes Australians overseas. However, the Census count is not the official population of an area. To provide a more accurate population figure the ABS also produces "Estimated Resident Population" (ERP) numbers. The ERP for Perenjori as of June 2021 is 652 persons which shows a slight increase in population from the previous years as shown in Graph 1.

[4] Landgate tenure data

The ERP gender distribution in the Shire shows that the male population dominated with 67% of the population and only 32% of women. The data also showed that the Aboriginal or Torres Strait Islander population within the Shire in 2021 was 2.7%.



Graph 1 – Shire of Perenjori Population 2016-2021[5]

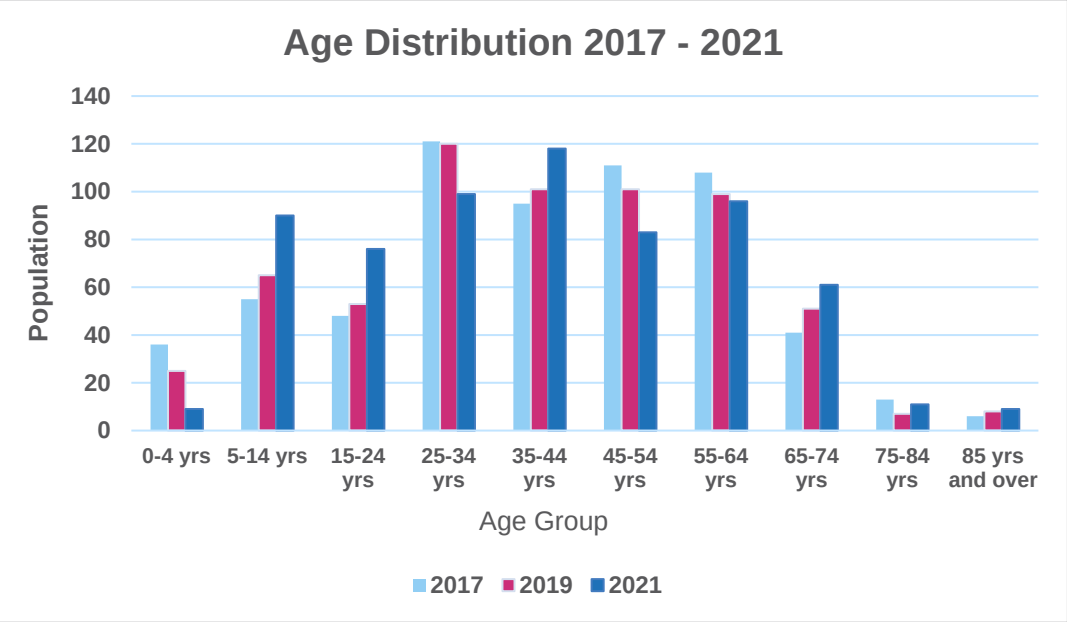
The age breakdown for residents in the Shire of Perenjori is shown in Graph 2. The median age in 2021 was 39.6 years, which is slightly older than the median age for Western Australia (38 years) with the working age population (15 to 64 years) being 72.4%.

Interestingly, in 2021 the largest age cohort in the Shire was 25-34 years, followed by the 35-44 years age group which could be contributed to the mining operations at Karara attracting younger people to the town. Another contributor is the injection of several new families to the area and transient workers who decided to make Perenjori their home.

However, over the last five years the age cohorts of 55-64 and 45-54 years respectively are still showing signs of an increase in older/retired residents within the community. Whilst many people remain active into their 60's, 70's and 80's, this could present challenges for the Shire in the future as it is acknowledged that these older residents are more likely to have limited mobility, suffer from health conditions and/or require the care of others.

There are no aged care living facilities in Perenjori and elderly residents either live independently or with family. A home and community care service are available to these community members and the Shire supports them through seniors' programs that offer information and support services. These include information sharing and support regarding preparing for and during emergency events.

[5] Australian Bureau of Statistics – Regional Summary



Graph 2 – Shire of Perenjori Age Distribution

The Census 2021 data recorded 19% of the Shire's population had engaged in voluntary work through an organisation (i.e. emergency services, committees, sporting clubs), showing strong connections to the community. A large proportion of volunteers are farm-based which lends itself to a greater capacity to respond quickly to bushfire events with farm-based equipment and local brigades. This does however, present potential issues with turn out times, isolation during bushfire events and fire response as a competing priority with seeding, harvesting and stock husbandry responsibilities. The Shire also experiences a reduction in residents generally between Christmas and early February, as local's holiday during the school holiday period and harvesting has been completed. The bushfire risk post-harvest is generally lower however, fires can still occur, and this can reduce the capability of local brigades to respond to incidents.

Large numbers of tourists travel annually through the Shire during wildflower season (July to November) with wildflowers, Astro-tourism and agriculture providing consistent tourism interests. It is common for travellers to stay overnight for one or multiple nights in the Shire at caravan and camping accommodation. Tourists are an important consideration, as travel continues to occur in bushfire season, and visitors may be unfamiliar with the area and unsure how to respond in a bushfire emergency.

3.1.4. Economic Activities and Industry

The economy of the Shire of Perenjori primarily depended on broadacre agriculture and the services that support farming in the area. Local farming includes the production of cereal crops such as wheat, canola, lupins and oats.

The 397,412ha total area of agricultural holdings is operated by 94 agricultural businesses and produced agricultural commodities worth $157,529,370 gross value in 2020/2021.[6]

Mining for iron ore at Karara and Mt Gibson Extension Hill are now the biggest economic contributors and an important part of the local economy, employing almost as many people as agriculture. The heavy economic reliance on agricultural and mining industries contributes to increased bushfire risk and therefore elevates the importance of managing risk. A severe bushfire would have a crippling impact on these industries, through the destruction of crops, feed sources, and impacts to transport corridors and production rates.

The agricultural landscape provides a variable risk and fires in this area can significantly impact the Shire's economics. The period from October through to January is when crops have matured and cured, ready for harvest. Before harvest, dried crops are particularly flammable, which increases the fuel load. Added to this abundance of fine, dry fuel is the increased use of machinery in the paddocks during this period. Fires can start easily and creating an environment for a fast-moving fire that can cover large areas in a short amount of time. This can result in considerable losses of crops and infrastructure (fences, machinery, wind breaks), and increase the risk of topsoil erosion by wind and rain causing possible additional financial loss in the future.

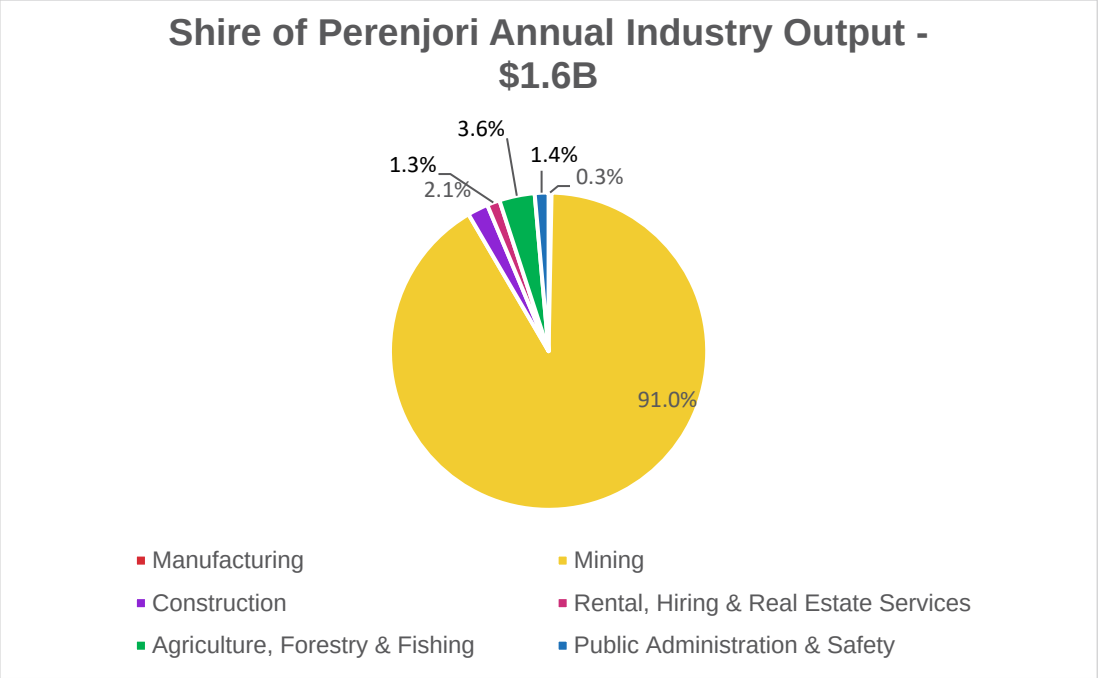
Mining can create significant challenges for responders in bushfire settings due to extremely difficult, uneven terrain to navigate as a result of mining operations and rehabilitation practices. Additionally, the pattern of mining can result in a patchy and varied landscape with large areas undergoing different stages of land rehabilitation.

Tourism is a small but growing economic driver for the Shire, with a number of businesses servicing the wildflower season in particular.

The Shire of Perenjori generates an estimated $1.6 billion in output which accounts for 11% of the total economic output in the Mid-West Region. Output data represents the gross revenue generated by businesses/organisations in each of the industry sectors as shown in Graph 3.

The largest industry sector for economic output is Mining with $1.4 billion accounting for 90% of the total output in the Perenjori Shire. This equates to 21.1% of all economic output for the Mining industry sector within the Mid-West Region.[7] Agriculture, Forestry & Fishing was the second biggest economic contributor with $45.9 million of the total output.

[6] https://www.abs.gov.au/statistics/industry/agriculture/value-agricultural-commodities-produced-australia/2020-21
[7] Remplan - Midwest Region – Economic Output - Perenjori



Graph 3 – Total Gross Revenue by Industry[8]

The data also shows that agriculture, forestry and fishing is the largest employing industry in the Shire which employs 27.9% of the population. This is significantly higher than the regional WA average, emphasising Perenjori's rural based economy. Mining was the next highest employer at 19.2%, which is reflective of the mining operations at Karara however, not all employees reside in the Shire as there are many that are fly in/fly out from Perth or drive in/drive out from neighbouring towns. Local Government administration employs 7.5% of the population.

3.1.4.1. Major Transport Routes

The Mid-West Region is well serviced with a network of major sealed roads connecting Geraldton to Perth, the Northwest and the Hinterland, which provides extensive use by double and triple road trains.

The Perenjori townsite is directly accessible from the north and south via the Mullewa-Wubin Road. This road provides an inter-town link between Wubin, Perenjori, Morawa and Mullewa and acts as a feeder for traffic into Geraldton, via Geraldton-Mt Magnet Road, and into Perth via Great Northern Highway. This road caters for heavy seasonal grain and fertilizer cartage as well as tourists during the wildflower season.

[8] App.remplan.com.au/midwestregion/economy/summary

Both the Carnamah-Perenjori Road and the Coorow-Latham Road approaches the town from the west. These roads form part of an east-west link from the agricultural pastoral regions to the Geraldton Port, various recreation areas and the major grain receival point at Mingenew.

In the event of a large-scale bushfire impacting major road networks within the Shire, the potential impact could be reduction of supplies, commodities and exports to outlying areas, neighbouring towns and disruptions to services. The Shire uses a sms system to notify residents and community members when there are road closures (particularly during the winter months) but also for fire related notifications. This sms service is dynamic and can be used to notify the community in emergency events and where evacuation is likely. The sms service currently has over 400 subscribers.

The Perenjori Rail Line, which runs through the centre of town, was once used for passenger services but is now used for freight services, including for transporting of iron ore. Whilst initially only transporting five trips per week of grain during season, recent iron ore transport has increased the use of this railway.

3.1.4.2. Tourism

Perenjori is located in the very heart of Wildflower Country and offers visitors the opportunity to view some of the most magnificent displays of Australian native plants in the country. Large numbers of tourists travel annually through the Shire with the busiest times being from July through to October in search of vibrant wildflower displays and picturesque camping locations. Western Australia is home to some of the darkest night skies in the world and the WA Wheatbelt is recognised as the top spot in the State to view the stars. Astro-tourism draws visitors to Perenjori and in 2018, the town became an Astrotourism Town and has a new observing site for visitors to stargaze through telescopes at the Milky Way, Southern Cross and the Magellanic Clouds.[9]

[9] https://www.visitperenjori.com.au/explore/stargazing.aspx

Figure 4 – Astro tourism is one of the many drawcards for visitors to the Shire of Perenjori

The Strategic Tourism Plan project initiated by the Wildflower Committee is to develop a strategic vision for the future of tourism in the shires of the Mid-West Region. Currently, tourism generates approximately $1.55 million. The Shire has partnered with local regional Council's to promote the wildflower region and in addition to wildflower trails, the region is known for the following tourism activities:

- Nature based – including bushwalking, bird watching, photography, camping
- Culture and heritage – including historic towns, Aboriginal heritage sites, museums
- Festivals and events – including Agricultural Expos, Arts and Crafts Expos, individual iconic town events
- Diverse range of industry in the area
- A unique rural way of life

The rugged, yet beautiful Karara Rangeland Park located north-east of Perenjori, comprises six former pastoral stations and hosts a diversity of landscapes, habitats and inhabitants. Covering 560,672ha and across several local government areas, the park is managed by DBCA for conservation, heritage protection and recreation. It is now a popular site for visitors particularly during the cooler months and wildflower season. The park has many camping grounds and attractions for enjoyment all year round.

High fire danger ratings and severe weather forecasts may cause for Total Fire Bans to be imposed in high bushfire risk areas and the park may be closed. These closures are communicated by Parks and Wildlife to the general public and external stakeholders including local governments who replicate this information to their community through a range of media platforms.

Smoke alerts are issued when smoke from prescribed burning or bushfires on lands managed by the department may affect people in towns and communities or restrict visibility for motorists. Generally, the cooler months are when the higher number of tourists travel in and around Perenjori where the risk of bushfire is reduced however, in the event of a large fire, consideration needs to be made for an additional larger volume of people in the area that may require support.

Various events occur in the Shire with the largest being the Perenjori Agricultural Show held in August every two years drawing approximately 1500 people. The Shire also hosts annual events such as Naidoc Week in July and the Australia Day and Christmas Day celebrations.

3.2. Description of the Environment and Bushfire Context

3.2.1. Topography and Landscape Features

The land within the Shire comprises of pastoral farmland, mining leases, Crown Land and townsites covering approximately 8,313km^2 and is within the Yarra Yarra catchment area.

The greater part of the Perenjori district belongs to the Yilgarn Block, a stable nucleus of Archaean granite-gneiss, metasediments, and basic rocks rich in magnesium and iron, layered sills of gabbro and dolerite and banded iron formations. The western boundary is formed by the great Darling Fault which separates the Block from the Perth Basin. The Perenjori district lies on the Darling Plateau, a gently undulating surface approximately 300 m above sea level relieved by some low hills and ranges of resistant rocks which reach 434m at Koolanooka and 450m in the Rothsay area. There are no rivers at the present day and only a few minor intermittent creeks, but the landscape is governed by river systems which were formed very long ago and have dried up into chains of salt lakes and pans.

The two prominent vegetation systems within the Shire are known as the Perenjori System and the Jibberding System. A vegetation system consists of a particular series of plant communities recurring in a catenary sequence or mosaic pattern, linked to topographic or geological features.

The Perenjori System covers the moister western part of the Darling Plateau in the district, on granite-gneiss, with a rainfall exceeding 325mm. The landscape undulates gently and there is a simple catena of yellow sandy soils with laterite on the higher ground, red loams on the lower ground and saline grey sandy soils along drainage lines.

The Jibberding System, covering part of the Darling Plateau on the eastern portion of the Shire has lower and less reliable rainfall therefore has brought about floristic differences than that of the Perenjori System.

The complex landscape features in the Shire can influence the potential for long distance spot fires from winds channelling through narrow valleys in the eastern portions of the Shire whereas salt lakes can provide a natural disruption in the landscape and can reduce the spread of fire. Limitations in both landscapes can arise from access and egress for fire fighters around lake systems, rocky gullies and rugged terrain as well as localised weather patterns and wind effects making fires a challenge to predict and control. Mitigation options in these landscapes may also increase the cost and/or feasibility and the range of mitigation activities will need to be considered and, in some cases alternative treatment solutions may have to be explored.

3.2.2. Climate and Bushfire Season

The Shire of Perenjori is classified, using a modified Köppen climate classification[10], as grassland, with hot, dry summers (November to April) and mild, wet winters (May to October). This is reflected in temperature and rainfall data obtained by the Bureau of Meteorology (BoM). Monthly averages collected over the last 25 years indicate that mean maximum temperatures range from 18.8°C in July to 37.4°C in January and mean minimum temperature range from 6.2°C in July to 20.4°C in February.

Monthly rainfall averages range from 45.5mm in July to 9.4mm in October. The Shire has a clearly defined winter season in June to August, and a clearly defined summer season in December to February. Annual average rainfall is 286mm a year, with the wettest month generally in July. However, rainfall patterns have changed over the last ten years, with a decrease in rainfall of approximately 20%.

Overall evaporation within the area generally exceeds rainfall, however evaporation is highest during summer, when the least rainfall occurs, and lowest during winter when rainfall is greatest. Winter rains are derived from southern cyclonic depressions and are typically soft and soaking. Summer rains are associated with isolated thunderstorms with falls of up to 30-40mm, tropical lows with falls of up to 100mm occurring in 5-10 minute intervals and rare cyclonic disturbances (100mm plus) with a return period of several decades. The summer rainfall, however is unreliable, local and erratic whereas generally the winter rains are reliable and widespread.

Consistent winter rainfall drives vegetation growth, and coupled with drying conditions in spring, can lead to consistently high fuel loads in summer, the high threat period for bushfires in the Shire. Understanding rainfall and temperature patterns is critical not only for understanding fuel loads and the timing of bushfire season, but also for the planning of appropriate mitigation activities.

[10] http://www.bom.gov.au/jsp/ncc/climate_averages/climate-classifications/index.jsp?maptype=kpngrp#maps

The nearest BoM Automatic Weather Station (AWS) is located at Morawa approximately 42kms north of Perenjori. The following graphs reflect the climatic conditions from the Morawa AWS.

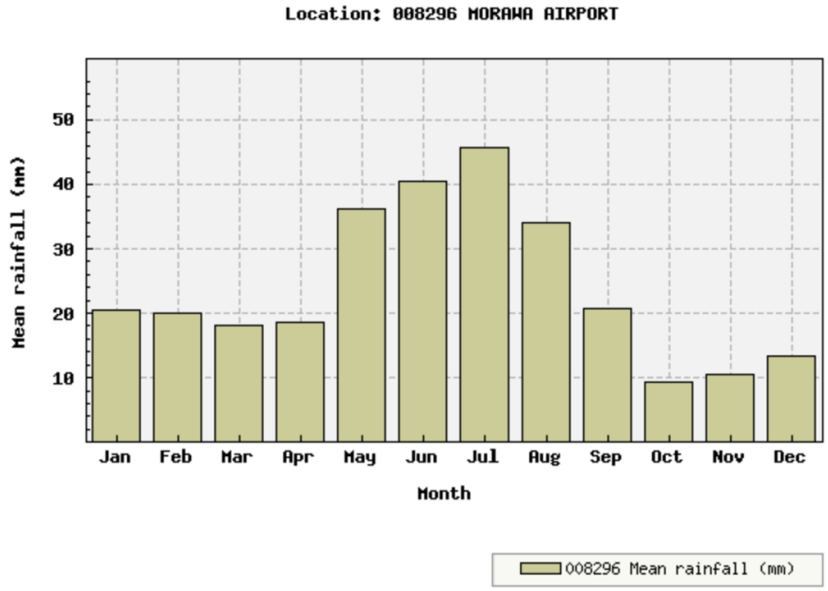


Figure 5 – Monthly mean rainfall (mm) 2012 - 2022 – Morawa (BoM)

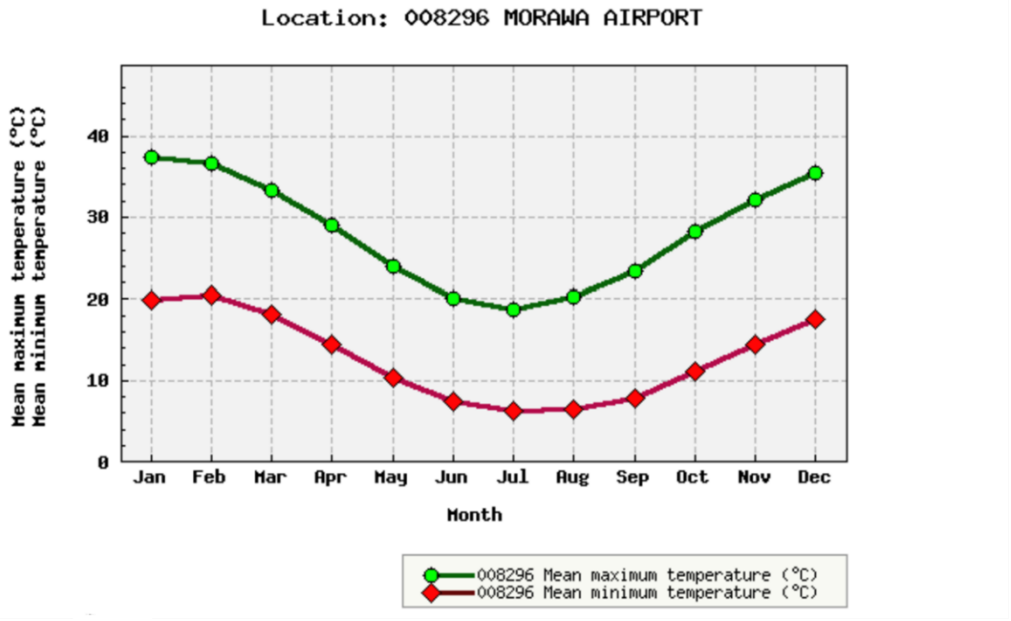


Figure 6 – Monthly mean temperatures from 1997-2022 – Morawa (BoM)[11]

[11] Bureau of Meteorology (Site Number 08296) www.bom.wa.gov.au

A weather station monitored by Department of Primary Industries and Regional Development (DPIRD) is located at Perenjori Airport. The statistics below were taken from the DPIRD weather station, Perenjori (PJ001) and considered to be representative of local weather conditions.

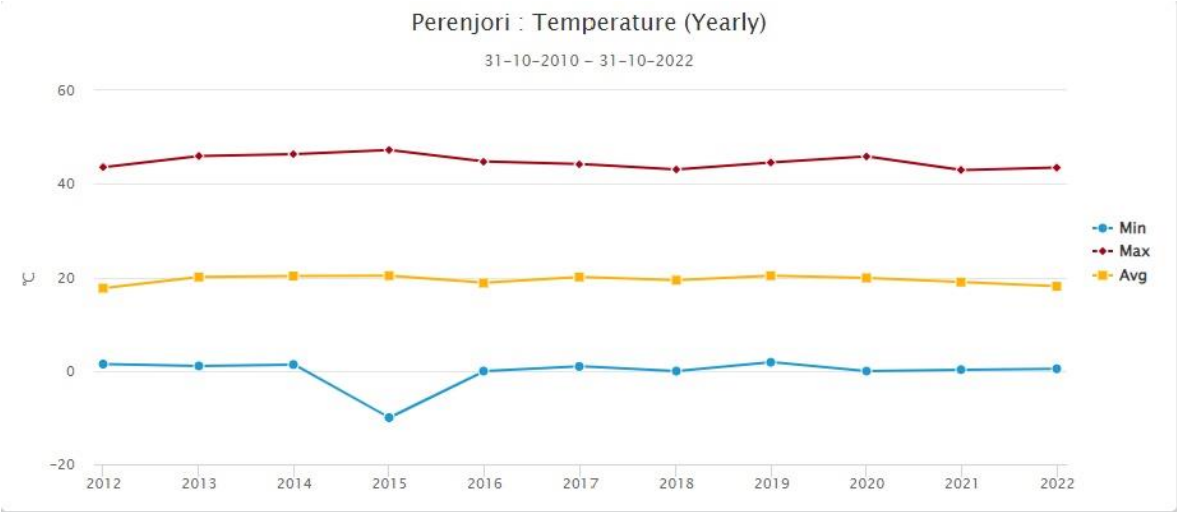


Figure 7 – Annual Temperatures 2010 – 2022– Perenjori (PJ001)[12]

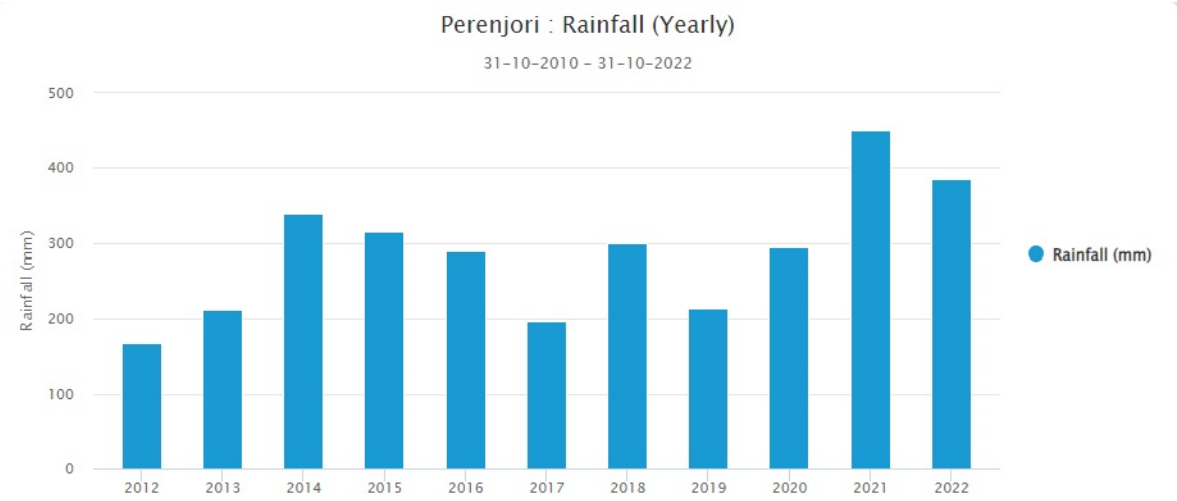


Figure 8 – Annual Rainfall (mm) 2010 - 2022 – Perenjori (PJ001)

Wind can play a significant role during bushfire season. Strong gusty winds cause a fire to spread faster across the landscape, and consistent strong winds can carry hot embers long distances, causing spot fires to start many kilometres ahead of the main fire front.

[12] https://weather.agric.wa.gov.au/station/PJ001

From October to February (spring and summer), the prevailing wind pattern is generally from the south, while from March (winter/spring) the prevailing wind pattern is generally from the east, south-east and from June to September (winter/spring) the prevailing wind pattern is generally from the west, north-west.

Perenjori is significantly inland and is known for its windy conditions, with average wind speeds since 2010 consistently between 8 and 15km/h and maximum gust speeds in excess of 150km/h. Winds tend predominantly from the west, west north-west and south-west sectors, with gusts from the north, north-west and north sectors, as reflected in Figures 10. Winds are mainly from the east, north-east in the morning. Afternoon wind patterns are more varied but tend strongly from the west and west, north-west. Wind direction and speeds are depicted in Figures 10 and 11 [13].

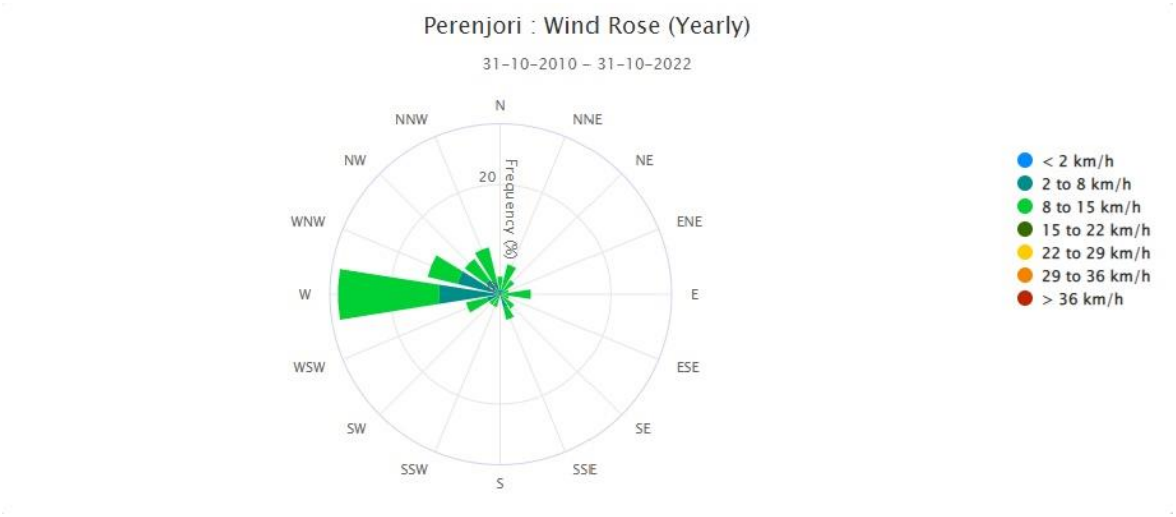


Figure 9 – Perenjori Wind Rose[14]

[13] BoM, annual wind speed vs. direction plot 9am and 3pm
[14] https://weather.agric.wa.gov.au/station/PJ001

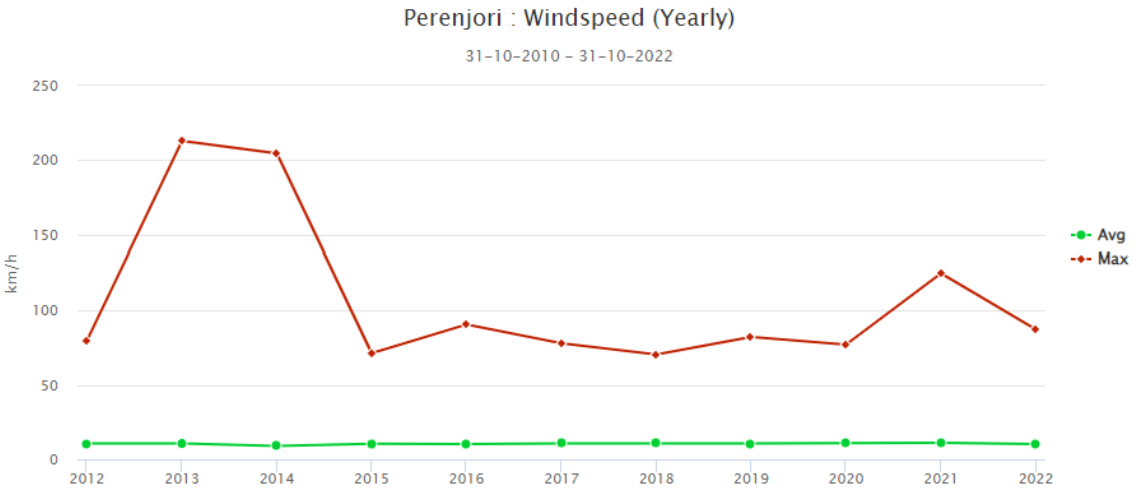
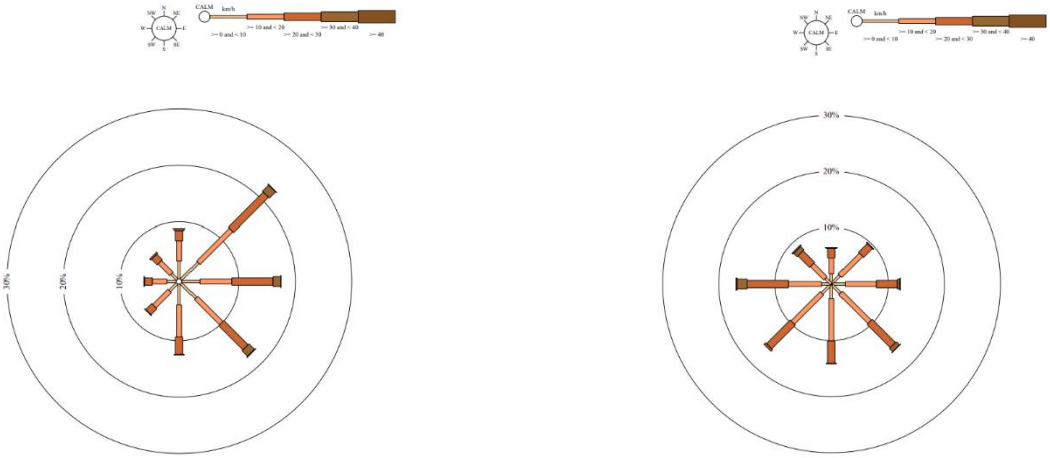


Figure 10 – Windspeed, Perenjori 2010 – 2022



9am conditions 3pm conditions

Figure 11 – Wind speed vs direction plot, Morawa (008296)

Relative humidity is commonly used to measure atmospheric moisture. The BoM defined it as “the ratio of the amount of water vapour measured to what the air could hold at saturation point”. Low relative humidity can cause vegetation to dry out and become more flammable. Relative humidity in the Shire indicates that minimum humidity levels since 2009 range from 0.1%-7.5%, average humidity levels range from 48.2–59.4% and maximum humidity levels range from 95%-100.2%.

Low humidity levels occur during the high-threat period from October to March, where vegetation that has grown through the winter rainfall months begins to dry and contributes to the level of bushfire risk. During a bushfire, low relative humidity will ensure that a fire begins quickly and burns more vigorously.

Bushfire Season

Bushfires can happen all year round, but the risk is much higher during the hotter and drier times of the year. The Shire of Perenjori has a spring-summer/summer bushfire season as identified by the BoM (Figure 12). This supports the understanding that in the Mid-West, fuel load development is driven by wet weather in the winter months and fire risk occurs during dry and hot conditions in the spring/summer. This is coupled with seasonal fire risk associated with crop harvesting. Bushfire season and risk are measured and informed by the Forest Fire Danger Index (FFDI) and the Grassland Fire Danger Index (GFDI).

Figure 12 – Fire Danger Seasons (Bureau of Meteorology)[15]

Generally, the bushfire season for Southern WA is from October through to April, however seasonal factors may influence and vary these times. The greatest danger is between late spring and early autumn when fuels have dried after the winter rains. Vegetation growth can be encouraged by periods of wet weather, increasing the amount of fuel available. When the weather is hot, the humidity is low and there has been little recent rain, this vegetation dries out and becomes more flammable. A fire is more likely to start, and continue to burn in hot, dry and windy conditions.

[15] Source: http://reg.bom.gov.au/weather-services/fire-weather-centre/bushfire-weather/index.shtml

Strong gusty winds help fan the flames and cause a fire to spread faster across the landscape, carrying hot embers many kilometres ahead of the main fire front. Changes in wind directions can bring periods of dangerous bushfire activity.

Future Climates

Consideration could be given to the changes in climatic conditions over time that may impact bushfire behaviour in the future. Recent projections indicate that average temperatures will continue to increase in all seasons. When this is combined with the expectation of a continued decrease in rainfall, it further supports a continued trend of harsher fire-weather climate in the future. Mitigation activities should also be considered in the broader context of changing weather patterns, as current practices may not always be possible in the coming years. Hazard reduction burning may become increasingly difficult as appropriate burning windows are impacted by changes in rainfall, temperature and humidity. Particular attention should also be paid to how remnant vegetation is managed, as available habitat for wildlife and endemic plant species continues to be impacted by changes in land use and weather patterns. Consideration should be given to emerging agricultural trends and regenerative agricultural practices and principles, to ensure risk management is embedded as part of a holistic approach to land management.

Fire Danger Ratings

Fire Danger Ratings (FDR) describe the potential level of danger should a bushfire start. They provide people with information so that they can take action to protect themselves and others from potentially dangerous impacts of bushfires. Ratings are calculated using a combination of weather forecasting and information about vegetation that could fuel a fire. They do not indicate the chance of a fire occurring.

FDR are issued on days when there is a fire risk. Each rating has a clear set of messages, including the actions the community can take to reduce their risk. The BoM issue fire weather warnings when forecast weather conditions are likely to be dangerous. Warnings are issued via radio news broadcasts and other media platforms. These warnings are issued for areas delineated by fire weather districts and knowledge of these districts is beneficial for local bushfire brigades, the community and in particular, the rural farming communities.

Until recently, the Shire of Perenjori was within the Inland Central West – South fire weather district of the Southwest Land Division. Over the past six years, the Shire has experienced an average of 46 days per year above ‘Very High’ FDR within the fire weather district. Table 5 shows the FDR for the Inland Central West – South fire weather district from 2015 to 2021.

Table 5 – FDR Ratings above Very High for the Inland Central West – South fire district from 2015 – 2021*[16]

		2015-2016	2016-2017	2017-2018	2018-2019	2019-2020	2020-2021
District	**FDR**						
Inland Central West - South	Very High	34	31	41	26	45	31
	Severe	7	5	6	11	19	18
	Extreme	0	0	0	1	1	0
	Catastrophic	0	1	0	0	0	0

*Note: Fire danger ratings are calculated on a financial year and not by calendar year. Data above is for historical purposes.

On 1 September 2022, FDR changed nationally to align with the Australian Fire Danger Rating System (AFDRS). The AFDRS will enhance public safety and reduce the impacts of bushfires by improving the scientific accuracy behind fire danger predictions and improving how fire danger is communicated. AFDRS uses the latest scientific understanding about weather, fuel and how fire behaves in different types of vegetation to improve the reliability of fire danger forecasts. This strengthens the ability of those working in emergency services to be better prepared, make improved decisions and provide better advice to the community.

This will replace the GFDI and FFDI and reduce the FDR from six to four action orientated ratings as shown in Figure 13.

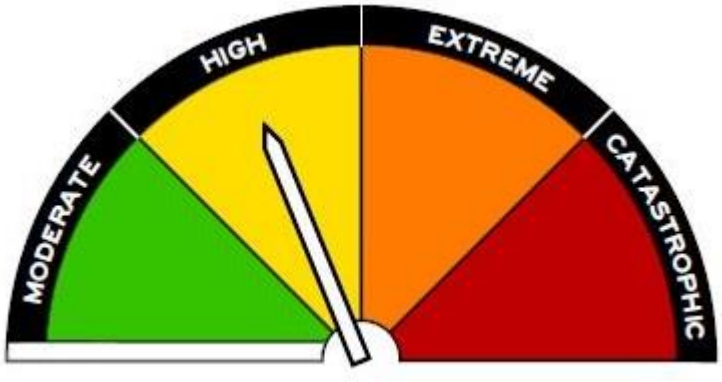


Figure 13 – The new FDR used in the Australian Fire Danger Rating System implemented from 1 September 2022

[16] BoM-State Operations Centre-Metro

There are four levels of fire danger in the new system:

1. **Moderate**: Plan and prepare
2. **High**: Be ready to act.
3. **Extreme**: Take action now to protect your life and property.
4. **Catastrophic**: For your survival, leave bush fire risk areas.

In addition to the new Fire Danger Ratings, a review of the current Fire Weather Districts was conducted by DFES and BoM to improve how FDR are communicated. The new boundaries consider many factors such as fuel types, climate, population and alignment with local government boundaries. The new Fire Weather Districts were introduced with the release of the AFDRS. On the 1 September 2022, the Fire Weather District for the Shire of Perenjori changed to the Midwest Inland fire district.

3.2.3. Vegetation

Perenjori is found within the Avon Wheatbelt Interim Biogeographic Regionalisation for Australia (IBRA) region and within the Ancient Drainage subregion. The majority of the Avon Wheatbelt IRBA area has been extensively cleared with an estimated 13% of the original remnant vegetation remaining. The vegetation is highly fragmented and very diverse. It is a mosaic of vegetation types characteristic of the surrounding biomes including Eucalypt Woodlands, Mallee Heath, plus salt lakes and granite outcrops. The extensive clearing has created a lack of connectivity between remnant bushland and this has meant that fire has been excluded from much of the vegetation.

Within the farming belt, most natural vegetation has been cleared except in small reserves and on public land along roadsides. There are areas adjacent to townsites such as Perenjori and Latham that contain natural vegetation which could present a substantial bushfire risk to human settlements and other assets if a wildfire was to occur in these areas.

Approximately 46% of the Shire is made up of broadacre farming with crop paddocks. Contained within these paddocks are small pockets of scrub or woodland vegetation depending on the location. The various types of natural vegetation and crops are all highly flammable and the fuel load depends upon how recently the area of vegetation has been burnt or cleared. On farmland, the fuel load will depend on the growing stage of the crop and will vary greatly before and after the harvesting period.

During bushfire season, hot and dry easterly winds can result in very high surface temperatures and low humidity and are associated with the formation of low pressure troughs along the west coast. Using these climatic variables, a GFDI can be determined and used to rate the conditions in relation to bushfire risk. The high wind speeds experienced during the summer, as well as the fuel type being predominantly crop, means that bushfires are typically wind driven and therefore fast moving.

The Shire is located within the Merredin Ancient Drainage Basin (AVW01) and Tallering (YAL02) IBRA sub-region and is characterised by red sandy plains, open Eucalypt and Acacia woodland and proteaceous heath. It includes Priority 1 plant assemblages of Blue Hills, Minjar and Chulaar Hills occurring on banded iron formations. Soils are primarily deep sands and loamy earth. Saline soils, associated with a shallow water table, are associated with the narrow drainage lines and salt lakes systems of the Shire.

There are several vegetation systems within the Shire and regional scale mapping indicates that Perenjori forms part of two main systems being the Perenjori and the Jibberding Systems. The vegetation within the Perenjori System is respectively Casuarina thicket, Eucalyptus woodland and salt country complex. Characteristic native plant species in this landscape consist of York Gum, Jam, Gimlet, Sandalwood and Salmon Gum with shrubs and understorey of Shrubby Sheoak, Mallee, Grevillea, Wattles and Samphire around salt pans.

Native characteristic species within the Jibberding System include Acacia species are now dominant in the sandplain thickets in place of Casuarina. Soils are primarily deep sands and loamy earth supporting York Gum, Salmon Gum, Red Mallee, Pixie Bush with understorey of Grevillea, Myrtles, Wattles with Samphire and Myrtle around the vicinity of the salt lakes.

Figure 14 - York Gum over herblands near Perenjori

Fire management of woodlands must consider the appropriate fire regime intervals of the understorey, regeneration of the eucalypt species and maintenance of the native fauna habitat.

Dry Eucalypt woodlands typically have sparse understorey which does not usually carry hot fire. This is particularly so for woodlands with Saltbush and Samphire understorey as these shrubs develop foliage with low flammability due to high salt content. In the areas where rainfall is higher, woodlands with low medium density shrubs of Acacia and Allocasuarina, Hakea and Melaleuca have a higher fuel load and continuity. Low woodlands of Rock Sheoak and Jam are fire prone but regenerate well following fire if grazing pressure is managed. Fire frequency is these woodlands is likely to be low following above average rainfall years. For many plant species in this semi-arid region, fire is a cue or stimulus for regeneration, while other species have evolved ways of avoiding fire. Inappropriate fire regimes may result in local extinctions of plants and animals

3.2.4. Threatened Species and Communities

An ecological community is a collection of species that have a strong common association. Some ecological communities found in the Shire are rare and threatened and classified as TECs. A TEC is a community presumed to be totally destroyed or at risk of becoming totally destroyed. Some TECs are protected under the *Environmental Protection and Biodiversity Conservation Act 1999 (Cth)*.

This includes the nationally registered TEC – *Eucalypt Woodlands of the Western Australian Wheatbelt* located in the Shire. Southwestern WA is an internationally recognised biodiversity hotspot, known for its diverse and unique wildflowers and animals. Many are found nowhere else in the world. Eucalypt woodlands are a signature natural asset that characterises the broad wheatbelt landscape. They are important to local communities, farmers and to indigenous cultures (eg. Nyungar/Noongar and Yamaji/Yamatji).

Eucalypt Woodlands is typically a dominance of Eucalypt trees in the canopy, such as Salmon Gum, York Gum, Gimlet or Wandoo. They vary in their structure and adapt according to local and regional geology, climate and other environmental factors. Some have understoreys dominated by native grasses, others by shrubs and rocky outcrops. The ecological community provides habitat for many native plants and animals that rely on Eucalypt woodlands for their homes and food. They also offer numerous ecosystem services including maintaining current water table levels and salinity. Remaining patches of the ecological community provide important wildlife corridors and refuges in a mostly fragmented landscape. They also provide invaluable environmental, economic, and social benefits to agriculture through their ecological services.

Frequency of fire for these ecological communities is one important consideration in addition to fire intensity and season. Too frequent fires may eliminate sensitive species. For example, obligate seeder species such as Salmon Gum and Gimlet are sensitive to frequent high intensity fire whereas those dominated by resprouter species (eg. Wandoo, Paperbark, York Gum) are much more resilient to a range of fire intervals. For Mallee and Heath species there is no evidence that they require fire to maintain vigour however, start to show signs of structural deterioration after 50 years without fire. Some faunal species are dependent on large areas of unburnt habitat (eg. Malleefowl). Malleefowl numbers may decline due to the loss of food and shelter resources after frequent fires. Fire management regimes in these TECs should ensure that life cycles of the component species of the ecological community are not disrupted such as using mosaic burning techniques, applied in a variety of seasons and intensities. Retaining a range of vegetation age classes throughout the mosaic ensures diversity and reduces the likelihood of a whole reserve or patch being lost in a single fire event.

Any treatment strategies that may be required in natural areas that contain environmentally sensitive flora, fauna or ecological communities will be conducted in consultation with DBCA. This aims to ensure that any impacts on these species is minimised and does not compound weed invasion, removal of vegetation or loss of habitat occurring in the area. A range of mitigation activities can be investigated to ensure species richness and biodiversity are not negatively impacted.

Flora and Fauna

The Biodiversity Conservation Act 2016 provides for native fauna and flora to be protected where they are under an identifiable threat of extinction and, as such, are considered to be “threatened”. Due to the sensitive nature of information around protected flora and fauna, some discretion has been applied to the amount of information recorded so further advice will need to be sought from subject matter experts to confirm the location of environmental assets with the shire and the potential impact of both mitigation and response strategies.

Threatened flora are plants which have been assessed as being at risk of extinction. In Western Australia, the term Declared Rare Flora (DRF) is applied to threatened flora. The DRF designator reflects that the plant needs to be specifically protected because they are under identifiable threat of extinction, are rare, or otherwise in need of special protection. There are a number of priority species within the Shire and 14 species of DRF recorded. The DRF species are listed at Table 6.

Table 6 – DRF recorded in the Shire of Perenjori[17]

Species	Common Name	Conservation Status
Acacia recurvata	Recurved Wattle	T (EN)
Acacia woodmaniorum	Woodman's Wattle	T (EN)
Darwinia polychroma	Harlequin Bell	T (EN)
Darwinia chapmaniana		T (VU)
Dasymalla axillaris	Native Foxglove	T (CE)
Eremophila nivea	Silky Eremophila	T (EN)
Eremophila rostrata subsp. trifida	Beaked Eremophila	T (CE)
Eromophila viscida	Varnish Bush	T (EN)
Eucalyptus synandra	Jingymia Mallee	T (VU)
Frankenia conferta	Silky Frankenia	T (EN)
Gyrostemon reticulatus	Net-veined Gyrostemon	T (CE)
Lepidosperma gibsonii		T (EN)
Stylidium amabile		T (CE)
Stylidium scintillans		T (VU)

EN – Endangered, CE – Critically Endangered, VU - Vulnerable

Threatened fauna is listed on the basis that it has been adequately surveyed and is deemed to be rare, in danger of extinction, or otherwise in need of special protection. Other fauna that are specifically protected under the *Biodiversity Conservation Act 2016* include migratory birds protected under the international agreements, presumed extinct species, and other specially protected fauna. Threatened and specially protected fauna within the Shire are listed in Table 7.

[17] Florabase.dpaw.wa.gov.au

Table 7 – Threatened fauna and migratory species within the Shire of Perenjori

Species	Common Name	Conservation Status
Calyptorhynchus latirostris	Carnaby's Cockatoo, Short-billed Black Cockatoo	T (EN)
Leipoa ocellata	Malleefowl	T (VU)
Macrotis lagotis	Greater Bilby	T (VU)
Idiosoma nigrum	Shield-backed Trapdoor Spider, Black Rugose Trapdoor Spider	T (VU)
Egernia stokesii badia	Western Spiny-tailed Skink, Baudin Island Spiny-tailed Skink	T (EN)
Migratory Species	**Common Name**	**Conservation Status**
Calidris ferruginea	Curlew Sandpiper	T (CE)

Frequently burnt areas are unsuitable for some of these species and while managing bushfire risk forms an important part of preserving these species, consideration must be given to the potential impact of treatments, to ensure they do not have adverse outcomes.

Different species prefer different post-fire vegetation ages, so no simple regime will favour all species. Recommendation is to use the most appropriate to favour the majority of species. The response of fire sensitive species relates to:

- Timing of burning – spring burning can lead to increased stress and mortality of red-tailed phascogale females and their dependent young.
- Loss of resources – the removal of food and habitat post fire can impact the trap door spider.
- Habitat preferences - many species prefer long unburnt habitat. Malleefowl prefer habitat that is 3 to 60 years post fire to maintain breeding populations.
- Fire intensity – golden pennants are a key food source of the western rosella; and they are short lived and only regenerate after a hot fire.[18]

Poor treatment selection could result in detrimental impacts such as damage to environmentally sensitive areas, loss of biodiversity, destruction of habitat and /or damage to natural, historic and indigenous values. All treatments need to be assessed in line with the requirements of the identified flora and/or fauna detailed below with care given to ensure appropriate authorities are consulted prior to any mitigation work commencing. The Shire will, where possible, remind landowners/managers of their obligation to obtain appropriate clearances and approvals prior to commencing vegetation based treatments.

[18] https://www.dbca.wa.gov.au/parks-and-wildlife-service/fire/fire-p[lants-and-vegetation

This includes:

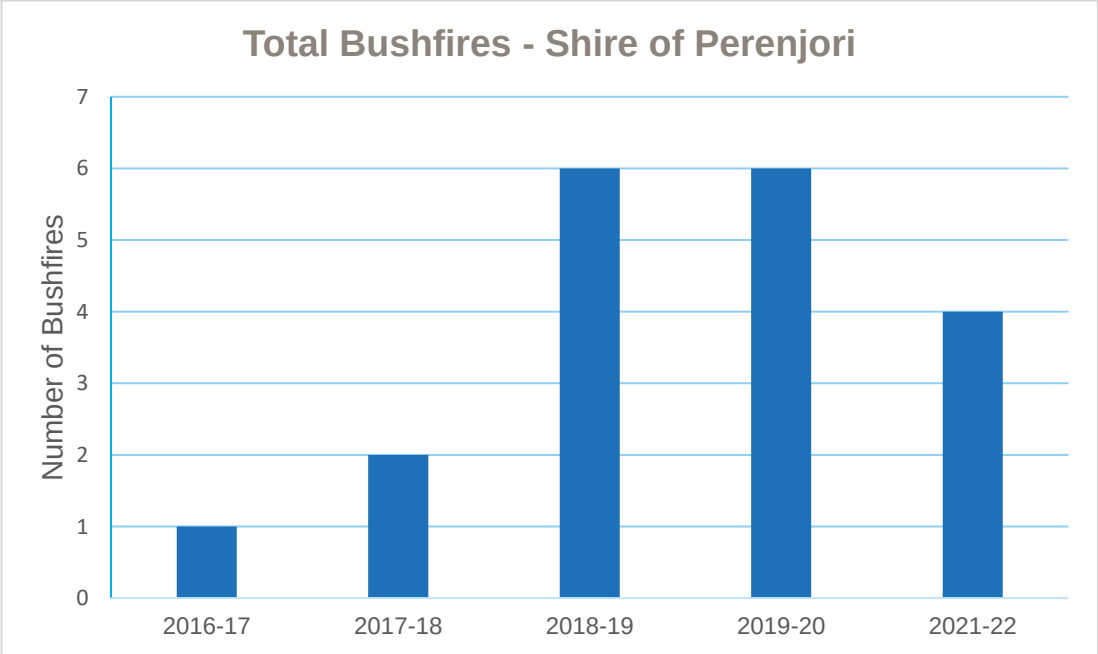
- Environmentally Sensitive areas
- Threatened Fauna and DRF
- TECs

3.2.5. Bushfire Frequency and Causes of Ignition

Reporting

Fires are recorded using the DFES Incident Reporting System (IRS). The data retrieved however, has its limitations and not all ignitions are reported and recorded within the Incident Reporting System. The figures may not reflect all incidents attended only by the DBCA – Parks and Wildlife Service. A bushfire is considered to be any vegetation fire (bush, grass, scrub, forest) of any size. Fire (large) is a bushfire more than one hectare in size.

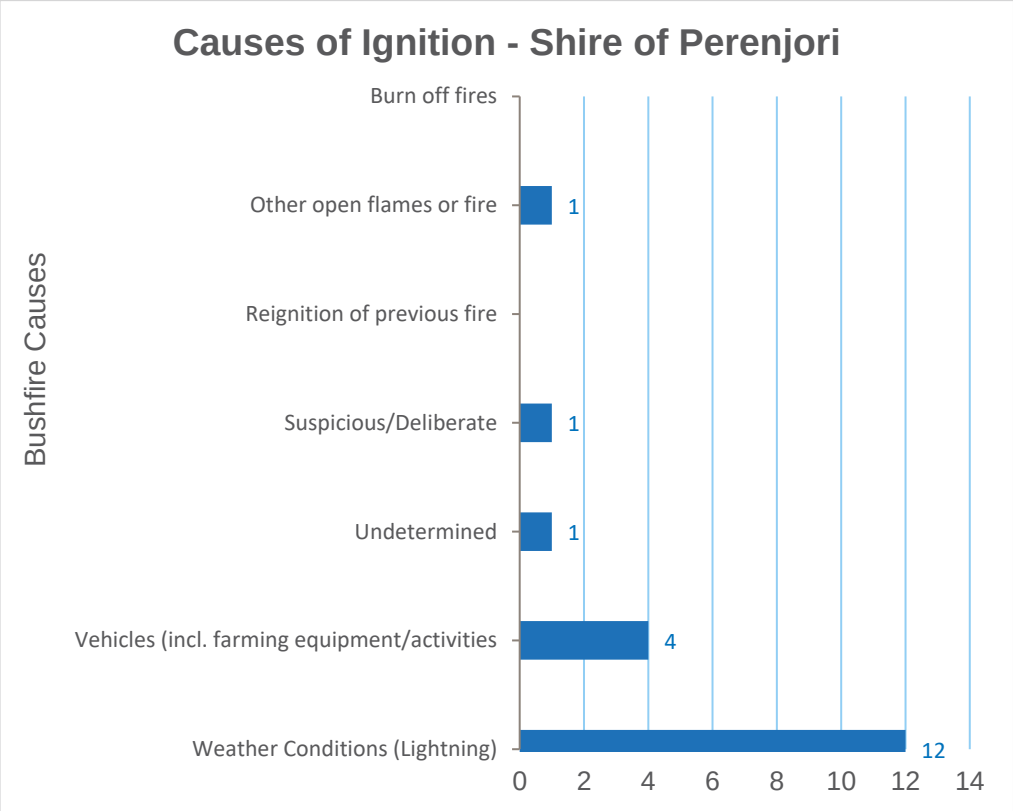
Graph 4 shows that between 1 July 2016 to 30 June 2022, a total of 19 bushfire incidents were recorded within the Shire of Perenjori. Weather conditions – lightning/weather was the primary source of ignition over this period with a total of 12 incidents reported throughout the period. Vehicles (incl. farming equipment/activities) was the second highest contributor with four fires.



Graph 4 – Total Number of Bushfires within the Shire of Perenjori[19]

[19] DFES Operational Information Systems Branch

There are a number of reasons why bushfires occur. Graph 5 shows that 63% of all ignitions across the Shire are caused by weather conditions – Lightning which is conducive to the weather patterns within the Mid-West region during the bushfire season. The remaining 37% of causes was made up of Vehicles (incl. farming equipment/activities), suspicious/deliberate behaviour, open flames and undetermined.



Graph 5 – Summary of Bushfire Causes of Ignition[20] (2016/17 to 2021/22)

This fire history data may serve to influence the decision making process by identifying potential areas where fires are more likely to start and why, contributing to the implementation of appropriate treatment strategies. Targeted education and prevention programs are just one example of allocating resources effectively to implement strategies in the BRM Plan where, for example, suspicious/deliberate fires, burn off fires and re-ignition of previous fires are occurring most.

Figure 15 shows the ignition causes by map location for the period July 2016 to June 2022 with fire incidents occurring across all the localities within the Shire.

[20] Source: DFES Operational Information Systems Branch

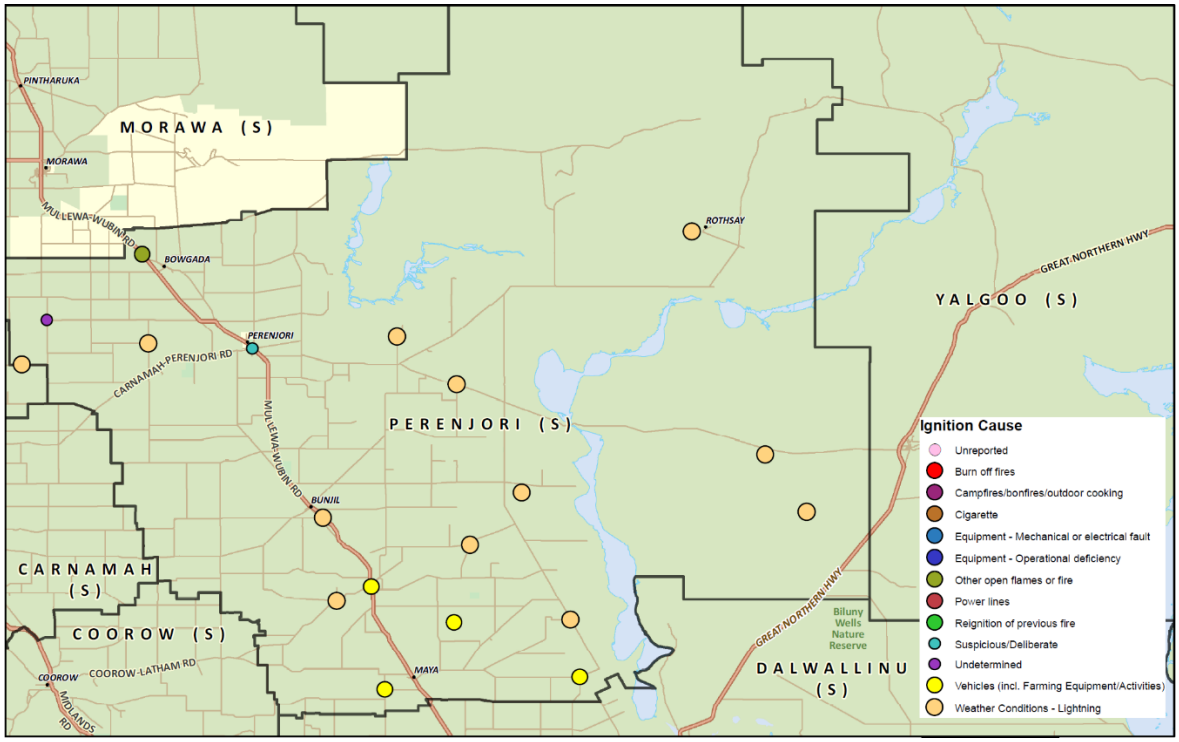


Figure 15 – Total Number of Bushfires within the Shire of Perenjori 2016-2022

3.2.6. Current Bushfire Management Activities

The Shire of Perenjori aims to mitigate the destructiveness of bushfire. The Shire is responsible for the inspection and management of fire mitigation/hazard reduction measures on land owned by, or vested to, the Shire which includes local parks and reserves, road reserves, recreation and drainage reserves.

Annually, the Shire implements their Fire Prevention Program and undertakes hazard reduction works on land it owns and controls which include mechanical works, slashing, chemical spraying and pruning. Prescribed burning is also undertaken when required to reduce fuel loads and support biodiversity.

Map of Bushfire Prone Areas

The intent of the WA Government's Bushfire Prone Planning Policy is to implement effective risk-based land use planning and development to preserve life and reduce the impact of bushfire on property and infrastructure. The *State Planning Policy 3.7 – Planning for Bushfire Prone Areas* ensures bushfire risk is given due consideration in all future planning and development decisions. This policy does not apply retrospectively, however the BRM Plan can help address this risk for existing development and establishing an effective treatment plan to manage the broader landscape and any unacceptable community risks. Bushfire prone areas within the Shire of Perenjori are shown in Figure 16.

Broad-scale mapping of bushfire prone areas indicates significant risk exists in the outer areas of the Shire, particularly towards the eastern boundary, with many smaller bushfire prone areas providing connectivity across the district.

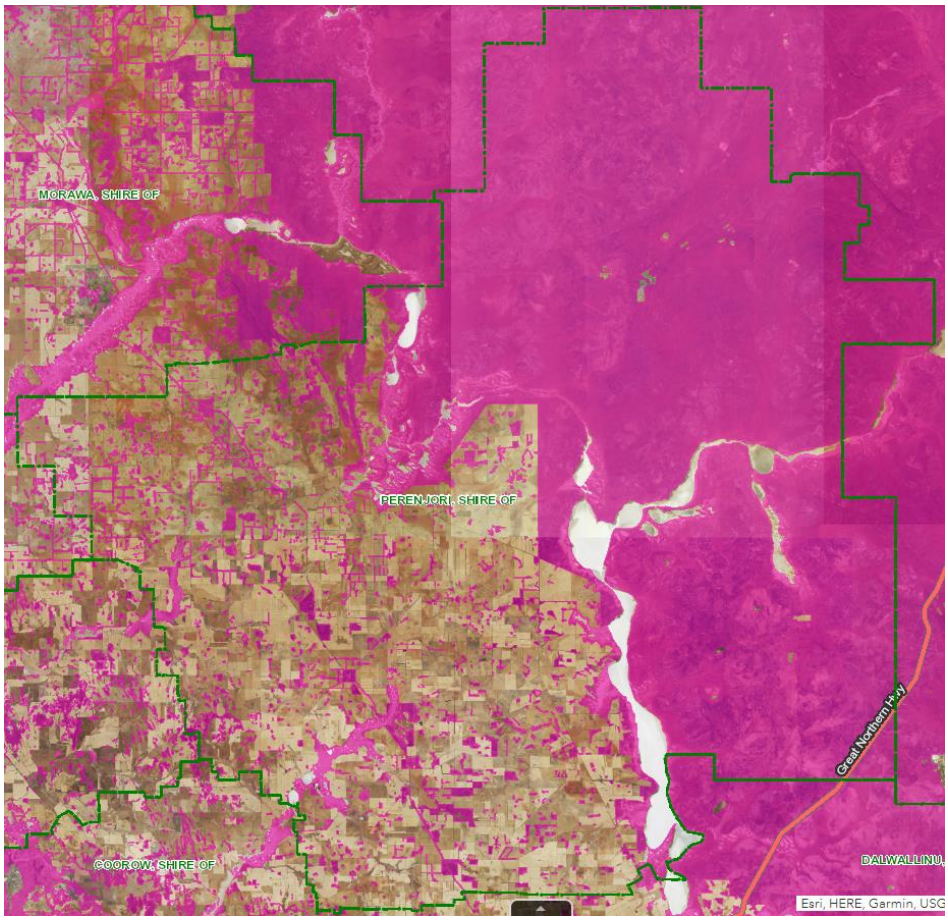


Figure 16 – Map of Bushfire Prone Areas within the Shire of Perenjori[21]

Volunteer Fire Brigades

Bushfire response in the Shire of Perenjori is wholly undertaken by volunteers with the following brigades existing within the local government area:

- Latham Volunteer Bush Fire Brigade
- Perenjori Volunteer Bush Fire Brigade

If additional resources are required to support bushfire response in the local government, they may be available through the DBCA – Parks and Wildlife Service, other DFES brigades and neighbouring local government bushfire brigades, at request.

[21] maps.slip.wa.gov.au/landgate/locate

The rate of volunteerism within the Shire is notably higher than the State average. This is of significant benefit to the community in the depth of local knowledge, confidence and connection around bushfire and response in the community. An ageing volunteer population may bring forward issues with crew turnaround and longevity. If recruitment and retention of younger volunteers slows over the coming years, this will remain a challenge for the Shire.

The Shire has a volunteer Chief Bushfire Control Officer (CBFCO) appointed by the Local Government under the *Bush Fires Act 1954*. The CBFCO is the most senior Fire Control Officer (FCO) in the Shire. The primary responsibility of the Chief is to manage, control and direct all operational bush fire-fighting activities within the district. Duties of the CBFCO include:

- Providing leadership to volunteer bush fire brigades;
- Liaising with the local government concerning fire prevention / suppression matters generally and to provide directions issued by the local government to bush fire control officers, bush fire brigades or brigade officers; and
- Issue directions as necessary to a FCO or a brigade member that is planning or conducting burning operations in the district.

Burning Restrictions

The *Bush Fires Act 1954,* s.17 and s.18 provide for the 'declaration and gazettal' of Prohibited and Restricted Burning Times (PBT & RBT), as well as the ability to adjust burning times to suit changing weather conditions. The Shire's limited burning times are as follows:

- RBT 17 September to 31 October, and 15 February to 15 March
- PBT 1 November to 14 February

Permits to Set Fire to the Bush ('Permits') are issued by the Shire of Perenjori during the Restricted Burning Periods each year. Permits are issued in an effort to prevent the escape of controlled burns and to ensure property owners safely plan and carry out their burning activities.

Total Fire Bans

A Total Fire Ban (TFB) is declared on days when fires are most likely to threaten lives and property. This is because of predicted extreme fire weather or when there already widespread fires and firefighting resources are stretched. Occasionally, TFBs may be declared outside of a fire season (such as in May or June) due to other factors such as higher temperatures and expected strong winds preceding a storm front. A TFB is declared by DFES following consultation with local governments. TFBs apply to the whole local government boundary and often apply to more than one local government area.

A total of 47 TFBs affecting the Shire of Perenjori were declared over the period 2017 to 2022 as seen in Table 8.

Table 8 – Total Fire Bans declared in the Shire of Perenjori between 2017 and 2022

Shire	2017-18	2018-19	2019-20	2020-21	2021-22
Perenjori	1	5	13	17	11

The statistics in Tables 5 and 6 show that the 2019-20 and 2020-21 fire seasons recorded the highest number of TFBs declared which aligns with the extreme climatic conditions for those years. Climate data for Western Australia recorded 2019 as the warmest and driest year on record followed by 2020 as the second warmest year on record.[22] The hot conditions combined with the dry landscape and strong winds produced dangerous fire weather during December 2019 into early January 2020 continuing a run of three consecutive months of highest accumulated FFDI on record.

Harvest and Vehicle Movement Bans

Harvest and Vehicle Movement Bans (HVMB) are imposed by local governments under the *Bush Fires Regulations 1954* Section 38A, and/or Section 24C, when prevailing and/or anticipated weather conditions and/or availability and/or response capacity of the local firefighting resources are reduced. The local government can issue HVMBs to restrict the use of vehicles and machinery that have an increased risk of igniting a fire.

Harvest and Vehicle Movement Bans are issued from the advice of the Shire's Chief Bush Fire Control Officer (CBFCO) when the use of engines, vehicles, plant or machinery during the Limited Burning times is likely to cause a fire or contribute to the spread of a bushfire. A HVMB may be imposed for any length of time but is generally imposed for the 'heat of the day' periods and may be extended or revoked by the local government, should weather conditions change.

Between 2017 and 2022, a total of 13 HVMBs were issued over the past six years with an average of one to two per year. The exception being in 2019 where five HVMB's were issued. This statistic is comparative to the FDR Ratings above Very High for 2019, the number of TFBs issued and the climate data reflecting the warmest year on record. No harvesting operations are permitted on Christmas Day, Boxing Day and New Year's Day. In addition, all burning is prohibited on days when the Fire Danger Rating is Very High or above, a TFB is declared or a HVMB is implemented. A free SMS service is available to residents notifying them when there is a variation to the Limited Burning Times and/or when a HVMB has been implemented. The SMS alerts is an opt-in service for members of the community who wish to receive these notifications.

[22] Bureau of Meteorology/Annual Climate Summary for Western Australia

Bush Fires Act 1954 section 33 Fire Management Notices

The Shire issues an annual Firebreak Notice in accordance with section 33 of the *Bush Fires Act 1954*. Also included is information on:

- FCO contacts
- Dates of RBT and PBT
- Communications and radio networks
- Firebreak requirements and, and
- Harvest operations requirements

This notice is sent to residents each year with their Rates Notice, requiring the installation of compulsory firebreaks on or before 1 October. The intention of the Firebreak Notice is to ensure that private properties have clear access to their properties maintained during the high threat period, to ensure accessibility for responding personnel in the event of a fire. It also serves as an opportunity to educate residents on other requirements (bans, permits etc) to manage and reduce overall risk in the community during high threat periods.

Community Engagement Activities

Currently, the Shire does not lead any formal community engagement programs regarding bushfire safety, awareness or planning. The section 33 notices are supplied alongside Rates notices, ensuring strong visibility of compliance requirements and local bushfire brigade volunteers, as members of the community, share knowledge and information with other community members. The Shire may choose to promote existing State-wide activations that encourage personal bushfire planning and bushfire safety and awareness to increase community resilience in the future. Consideration needs to be given to the costs of resourcing effective community engagement campaigns and the reasonable capacity of local governments to support their delivery.

Other Current Local Government Wide Controls

This BRM Plan is a hazard specific plan that addresses significant bushfire risk within the local government. It aims to integrate bushfire risk management programs and activities into the business processes of the Shire, other agencies and landowners. The outcomes of this Plan will be used to inform the Shire when preparing and then implementing bushfire mitigation strategies for Shire managed land.

Bushfire is the highest risk factor to the community from an emergency management perspective in the Shire. The increased fire risk to the community due to a drying climate and existing developments within and around high fuel load areas places increasing pressure on fire brigade volunteers to support fire response requirements. Existing and future bushfire risk management programs, such as the annual Firebreak notice issued under s.33 *Bush Fires Act 1954*, will utilise the BRM Plan to prioritise resources and influence the decision making process.

The use of social media platforms to communicate bushfire alerts and warnings to the community and provide information about prevention and preparedness is a popular tool with an increasing uptake of subscribers and views. The Shire uses their website and Facebook accounts to keep the community informed. Further information about the Local Government Wide Controls and how they will support the treatment of bushfire risk can be found in section 6.1 – Local Government Wide Controls.

4. Asset Identification and Risk Assessment

4.1. Planning Areas

The Shire of Perenjori was divided into four planning areas to undertake the asset identification and risk assessment process. These areas are:

- Bowgada;
- Caron-Latham;
- Maya; and
- Perenjori

In defining the planning areas, population distribution, road networks, industry and topography were the key elements. Figure 17 is a map showing the boundaries of those planning areas identified within the Shire of Perenjori.

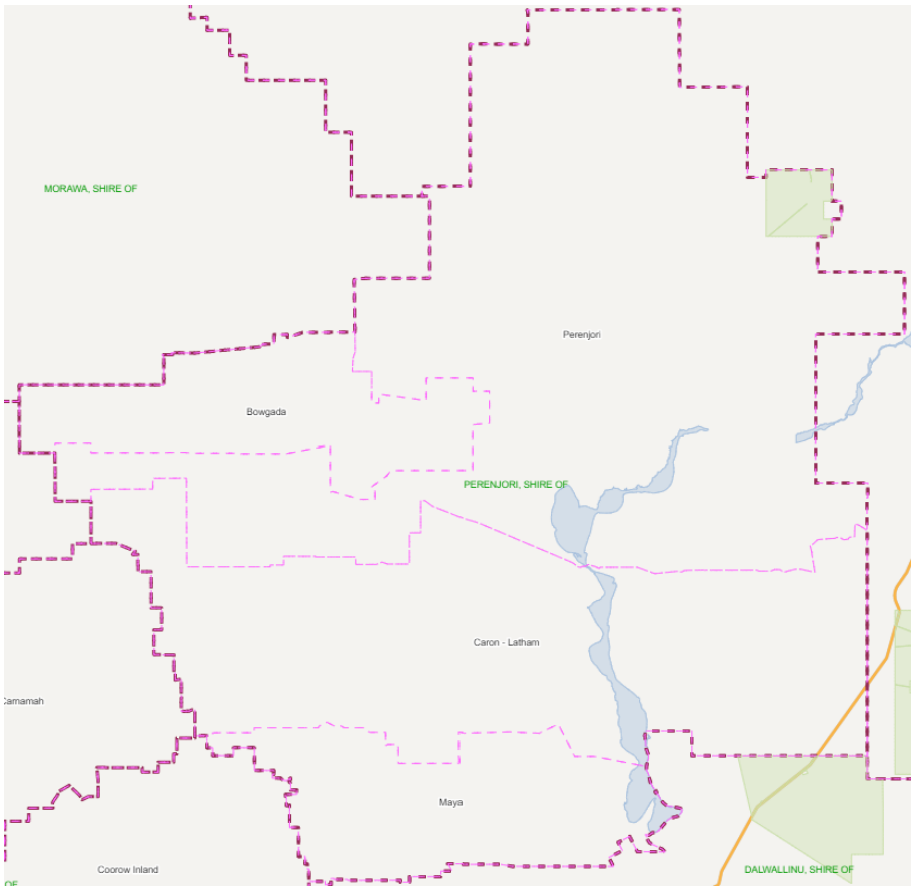


Figure 17 – Planning Areas within the Bushfire Risk Management System (BRMS) for the Shire of Perenjori[23]

[23] brms.dfes.wa.gov.au/app/map

4.2. Asset Identification

Asset identification and risk assessment has been conducted at the local level using the methodology described in the Guidelines using BRMS. Identified assets are categorised into the following categories and subcategories provided in Table 9.

Table 9 – Asset Categories and Subcategories

Asset Category	Asset Subcategories
Human Settlement	**Residential areas** Residential area, including dwellings in rural areas and the rural urban interface. **Places of temporary occupation** Commercial and industrial areas, mining sites or camps and other locations where people may work or gather. **Special risk and critical facilities** Location and facilities where occupants may be especially vulnerable to bushfire for one or more of the following reasons: • Occupants may have limited knowledge about the impact of bushfires; • Occupants may have a reduced capacity to evaluate risk and respond adequately to bushfire event; • Occupants may be more vulnerable to stress and anxiety arising from a bushfire event or the effects of smoke; • There may be significant communication barriers with occupants; • Relocation and/or management of occupants may present unique challenges or difficulties, such as transportation, or providing alternative accommodation, healthcare or food supplies; or • Facilities that are critical to the community during a bushfire emergency.
Economic	**Agricultural** Areas under production, such as pasture, livestock, crops, viticulture, horticulture and associated infrastructure. **Commercial and industrial** Major industry, waste treatment plants, mines (economic interest), mills, processing and manufacturing facilities and cottage industry. **Critical infrastructure** Power lines and substations, water pumping station, tanks/bores and pipelines, telecommunications infrastructure, railways, bridges, port facilities and wastewater treatments plants. **Tourist and recreational** Tourist attractions, day-use-areas and recreational sites that generate significant tourism and/or employment within the local area. These assets are different to tourist accommodation described as a Human Settlement Asset (see above).

Asset Category	Asset Subcategories
	Commercial forests and plantations Plantations and production native forests. **Drinking water catchments** Land and infrastructure associated with drinking water catchments.
Environmental	**Protected** Flora, fauna and ecological communities that are listed as a: • Critically Endangered, Endangered or Vulnerable species under the Environmental Protection and Biodiversity Conservation Act 10999 (Cth) (EPBC Act 1999) (including associated critical habitat); • Critically Endangered, Endangered or Vulnerable species under the Biodiversity Conservation Act 2016; • Critically Endangered, Endangered or Vulnerable ecological community under the EPBC Act 1999 (Cth); • Critically Endangered, Endangered or Vulnerable Threated Community (TEC) endorsed by the Minister for Environment (WA); • Fauna protected under international conventions; and • Ramsar wetlands of international importance. **Priority** Flora, fauna and ecological communities that are a: • Priority species listed on the Priority Flora or Priority Fauna Lists held by DBCA (Priority 1-5); • Priority Ecological Community (PEC) (Priority 1-5), and • Wetlands of national or state importance. **Locally important** Species, populations, ecological communities or habitats that the local community or independent scientific experts consider important for the area and for which there is some scientific evidence that protection would be beneficial. Wetlands of local importance. Sites being used for scientific research.
Cultural	**Aboriginal heritage** Places of indigenous significance identified by the DPLH or the local community. **Recognised heritage** Non-indigenous heritage assets afforded legislative protection through identification by the National Trust, State Heritage List or Local Planning Scheme Heritage List. **Local heritage** Assets identified in a Municipal Heritage Inventory or by the community as being significant to local heritage.

Asset Category	Asset Subcategories
	Other Other assets of cultural value to the local community, for example community halls, churches, clubs and recreation facilities.

4.3. Assessment of Bushfire Risk

Risk assessments have been undertaken for each asset or group of assets identified using the methodology described in the Guidelines. The Asset Risk Register will be maintained in BRMS. This information is not included in the plan because information captured through BRMS includes data considered personal in nature including the names and addresses of landholders, and there is the potential for the data collected through BRMS to be used for purposes other than bushfire risk mitigation.

The Shire's CEO is to be consulted prior to any Bushfire Risk Management Planning data being released to the public domain. To actively encourage and support the implementation, monitoring and review of agreed actions, the Shire of Perenjori as a matter of course or upon requests, will provide reports to key stakeholders that detail the assets and treatments that the stakeholders, (landowners/managers) have responsibility for.

The number of identified assets within the local government in each asset category at the time of BRM Plan endorsement is shown in the following table.

Table 10 – Asset Category Proportions

Asset Category	Number of identified assets
Human Settlement	175
Economic	11
Environmental	7
Cultural	6

4.3.1. Consequence Assessment

Consequence is described as the outcome or impact of a bushfire event. The approach used to determine the consequence rating is different for each asset category: Human Settlement, Economic, Environmental and Cultural.

The methodology used to determine the consequence rating for each asset category is based on the following:

- **Consequence Rating – Human Settlement, Economic and Cultural Assets**

  The outcome or impact of a bushfire event on the asset, or a group of asserts, measured by the hazard posed by the classified vegetation and the vulnerability of the asset.

- **Consequence Rating – Environmental Assets**

  The outcome or impact of a bushfire event on the asset, or a group of assets, measured by the vulnerability of the asset and the potential impact of a bushfire or fire regime.

4.3.2. Likelihood Assessment

Likelihood is described as the potential of a bushfire igniting, spreading and reaching an asset. The approach used to determine the likelihood rating is the same for each asset category: Human Settlement, Economic, Environmental and Cultural.

4.3.3. Assessment of Environmental Assets

Using available biological information and fire history data, environmental assets with a known minimum fire threshold were assessed to determine if they were at risk from bushfire, within the five-year life of the BRM Plan. Environmental assets that would not be adversely impacted by bushfire within the five-year period have not been included and assessed in the BRM Plan. The negative impact of a fire on these assets (within the period of this BRM Plan) was determined to be minimal and may even be of benefit to the asset and surrounding habitat.

4.3.4. Local Government Asset Risk Summary

A risk profile for the local government is provided in Table 11. This table shows the proportion of assets at risk from bushfire in each risk category at the time the BRM Plan was endorsed.

Table 11 – Local Government Asset Risk Summary

Asset Category	Risk Rating				
	Low	Medium	High	Very High	Extreme
Human Settlement	8.5%	30.2%	23.6%	15.6%	10.1%
Economic	1.5%	3.0%	1.0%	0.0%	0.0%
Environmental	0.0%	0.0%	3.5%	0.0%	0.0%
Cultural	2.0%	0.0%	1.0%	0.0%	0.0%

5. Risk Evaluation

5.1. Evaluating Bushfire Risk

The risk rating for each asset has been assessed against the likelihood and consequence descriptions to ensure:

- The rating for each asset reflects the relative seriousness of the bushfire risk to the asset;
- Consequence and likelihood ratings assigned to each asset are appropriate, and;
- Local issues have been considered.

5.2. Risk Acceptability

Risks below a certain level were not considered to require specific treatment during the life of this BRM Plan. They will be managed by routine local government wide controls and monitored for any significant change in risk.

In most circumstances risk acceptability and treatment will be determined by the landowner, in collaboration with local government and fire agencies. However, as a general rule, the following courses of action have been adopted for each risk rating.

Table 12 – Criteria for Acceptance of Risk and Course of Action

Risk Rating	Criteria for Acceptance of Risk	Course of Action
Extreme	Requires the application of asset specific treatment strategies. Treatment action is required within the first year of this plan being endorsed. CEO may specify criteria. It is unlikely that Local Government wide controls would be adequate to manage the risk.	Routine controls are not enough to adequately manage the risk. Specific action is required in the first two years of BRM Plan where resourcing and funding permits. Treatments will be approached by: • Priorities will be made for treatments that will have maximum benefit to multiple assets and critical infrastructure; • Identification of partnerships with other agencies for strategic mitigation; • Treatments that benefit vulnerable communities will be given priority; and

		• Communication with stakeholders as identified in the Communications Plan. Assets will be reviewed post treatment.
Very High	Requires the application of asset specific treatment strategies. Treatment action is required within the first three years of this plan being endorsed. CEO may specify criteria. It is unlikely that Local Government wide controls would be adequate to manage the risk.	Routine controls are not enough to adequately manage the risk. Specific action is required in the first three years of the BRM Plan where resourcing and funding permits. Treatments will be approached by: • Priorities will be made for treatments that will have maximum benefit to multiple assets and critical infrastructure; • Identification of partnerships with other agencies for strategic mitigation; and • Communication with stakeholders as identified in the Communications Plan. Assets will be reviewed post treatment.
High	Asset specific treatment strategies may be required to adequately manage the risk. CEO may specify criteria. Local Government wide controls may contribute to management of risk.	Routine controls may not be enough to adequately mange the risk. Specific action is required during the life of the BRM Plan where resourcing and funding permits. Treatments will be approached by: • Priorities will be made for treatments that will have maximum benefit to multiple assets and critical infrastructure; • Where assets fall adjacent to Extreme or Very High assets, treatments may be extended and included where there may be strategic benefit; and • Communication with stakeholders as identified in the Communications Plan.

		Assets will be reviewed post treatment. Risk assessments to be reviewed at least once within the life of the BRM Plan.
Medium	Risk rating is considered acceptable with adequate controls. Asset specific treatments are not required, but risk should be monitored. Local Government wide controls should be sufficient to manage risk.	A specific action is not required. risk will be managed with routine controls and monitored as required. Risk assessments to be reviewed at least once within the life of the BRM Plan.
Low	Risk rating is considered acceptable with adequate controls. Treatment action is not required but risk must be monitored.	Specific actions are not required. Risk will be managed with routine controls and monitored as required.

5.3. Treatment Priorities

The treatment priority for each asset has been automatically assigned by BRMS and recorded in the Treatment Schedule, based on the asset's risk rating. Table 13 shows how consequence and likelihood combine to give the risk rating and subsequent treatment priority for an asset.

Table 13 – Treatment Priorities

Likelihood \ Consequence	Minor	Moderate	Major	Catastrophic
Almost Certain	3D (High)	2C (Very High)	1C (Extreme)	1A (Extreme)
Likely	4C (Medium)	3A (High)	2A (Very High)	1B (Extreme)
Possible	5A (Low)	4A (Medium)	3B (High)	2B (Very High)
Unlikely	5C (Low)	5B (Low)	4B (Medium)	3C (High)

6. Risk Treatment

The purpose of risk treatment is to reduce the likelihood of a bushfire occurring and/or the potential impact of a bushfire on the community, economic, built and natural environments. This is achieved by implementing treatments that modify the characteristics of the hazard, the community or the built and natural environment.

There are many strategies available to treat bushfire risk. The treatment strategy (or combination of treatment strategies) selected will depend on the level of risk and the type of asset being treated. Not all treatment strategies will be suitable in every circumstance.

6.1. Local Government-Wide Controls

Local government wide controls are activities that are non-asset specific, rather they reduce the overall bushfire risk within the local government. The following controls are currently in place across the Shire:

- *Bush Fires Act 1954*, Section 33 notices, including applicable fuel management requirements, firebreak standards and annual enforcement programs;
- Declaration and management of Limited Burning Times and TFBs for the local government area;
- Declaration and management of HVMBs for the local government area;
- Public education campaigns and the use of DBCA and DFES state-wide programs, tailored to suit local needs; including programs such as 5 Minute Fire Chat, Bushfire Action Month and Are You Ready Campaign;
- State planning framework and local planning schemes, implementation of appropriate land subdivision and building standards in line with DFES, Department of Planning and Building Commission policies and standards;
- Monitoring performance against the BRM Plan and reporting annually to the local government Council and OBRM;
- BFAC meetings as required to review current practices and contemporary bushfire management concepts; and
- Quarterly LEMC meetings.

A local government wide controls, multi-agency work plan has been developed **(Appendix 2).** The plan details work to be undertaken as part of normal business, improvements to current controls and new controls to be implemented to better manage bushfire risk across the local government area.

6.2. Asset-Specific Treatment Strategies

Asset-specific treatments are implemented to protect an individual asset or group of assets, identified and assessed in the BRM Plan as being at risk from bushfire. There are five asset specific treatment strategies:

- **Fuel management** – Treatment reduces or modifies the bushfire fuel through manual, chemical and planned burning methods;
- **Ignition management** – Treatment aims to reduce potential human and infrastructure sources of ignition in the landscape;
- **Preparedness** – Treatments aim to improve access and water supply arrangements to assist firefighting operations;
- **Planning** - Treatments focus on developing plans to improve the ability of firefighters and the community to respond to bushfire, and;
- **Community Engagement** – Treatments seek to build relationships, raise awareness and change the behaviour of people exposed to bushfire risk.

6.3. Development of the Treatment Schedule

The treatment schedule is a list of bushfire risk treatments recorded within BRMS. The Shire of Perenjori will be focusing on developing a program of works that covers activities to be undertaken within the first year after the approval of the BRM Plan. The treatment schedule will evolve and develop throughout the life of the BRM Plan.

The treatment schedule was developed in broad consultation with landowners and other stakeholders including DFES and DBCA.

Landowners are ultimately responsible for treatments implemented on their own land. This includes any costs associated with the treatment and obtaining the relevant approvals, permits or licences to undertake an activity. Where agreed, another agency may manage a treatment on behalf of a landowner. However, the onus is still on the landowner to ensure treatments detailed in this BRM Plan's Treatment Schedule are completed.

7. Monitoring and Review

Monitoring and review processes are in place to ensure that the BRM Plan remains current and valid. These processes are detailed below to ensure outcomes are achieved in accordance with the *Communication Strategy* and *Treatment Schedule*.

7.1. Review

A comprehensive review of this BRM Plan will be undertaken at least once every five years, from the date of council approval. Significant circumstances that may warrant an earlier review of the BRM Plan include:

- Changes to organisational responsibilities or legislation;
- Changes to the bushfire risk profile of the local government; or
- Following a major fire event.

7.2. Monitoring

BRMS will be used to monitor the risk ratings for each asset identified in the BRM Plan and record the treatments implemented. Risk ratings are reviewed on a regular basis as described in Table 12 – Criteria for Acceptance of Risk and course of Action. New assets will be added to the *Asset Risk Register* when they are identified.

7.3. Reporting

The Shire of Perenjori will be requested to contribute information relating to their fuel management activities to assist in the annual OBRM *Fuel Management Activity Report*. Reporting the progress of mitigation works and the management of bushfire risk through the BRM Plan to the council sub-committees being the BFAC, LEMC and other relevant working groups as required.

7.3.1. Privacy and Release of Information

The BRMS captures information and data considered ‘personal’ in nature including the names and addresses of landholders. There is the potential for the data collected through the BRMS to be used for purposes other than bushfire risk mitigation. The CEO is to be consulted prior to any Bushfire Risk Management data being released to the public domain.

8. Glossary

Asset	A term used to describe anything of value that may be adversely impacted by bushfire. This may include residential houses, infrastructure, commercial, agriculture, industry, environmental, cultural and heritage sites.
Asset Category	There are four categories that classify the type of asset – Human Settlement, Economic, Environmental and Cultural.
Asset Owner	The owner, occupier or custodian of the asset itself. Note: this may differ from the owner of the land the asset is located on, for example a communication tower located on leased land or private property.
Asset Register	A component within the Bushfire Risk Management System (BRMS) used to record the details of assets identified in the Bushfire Risk Management Plan (BRM Plan).
Asset Risk Register	A report produced within the BRMS that details the consequence, likelihood, risk rating and treatment priority for each asset identified in the BRM Plan.
Bushfire	Unplanned vegetation fire. A generic term which includes grass fires, forest fires and scrub fires both with and without a suppression objective.
Bushfire Hazard	The hazard posed by the classified vegetation, based on the vegetation category, slope and separation distance.
Bushfire Risk Management Plan	A development related document that sets out short-, medium- and long-term bushfire risk management strategies for the life of a development.
Bushfire Risk	The chance of a bushfire igniting, spreading and causing damage to the community or the assets they value.
Bushfire Risk Management	A systematic process to coordinate, direct and control activities relating to bushfire risk with the aim of limiting the adverse effects of bushfire on the community.
Consequence	The outcome or impact of a bushfire event.
Draft Bushfire Risk Management Plan	The finalised draft BRM Plan is submitted to the OBRM for review. Once the OBRM review is complete, the BRM Plan is called the 'Final BRM Plan' and can be progressed to local government council for approval.
Geographic Information System (GIS)	A data base technology, linking any aspect of land-related information to its precise geographic location.

Landowner	The owner of the land, as listed on the Certificate of Title; or leaser under a registered lease agreement; or other entity that has a vested responsibility to manage the land.
Likelihood	The chance of something occurring. In this instance, it is the potential of a bushfire igniting, spreading and impacting on an asset.
Locality	The officially recognised boundaries of suburbs (in cities and larger towns) and localities (outside cities and larger towns).
Map	The mapping component of the BRMS. Assets, treatments and other associated information is spatially identified, displayed and recorded within the map.
Planning Area	A geographic area determined by the local government which is used to provide a suitable scale for risk assessment and stakeholder engagement.
Priority	See Treatment Priority.
Recovery Cost	The capacity of an asset to recover from the impacts of a bushfire.
Risk Acceptance	The informed decision to accept a risk, based on the knowledge gained during the risk assessment process.
Risk Analysis	The application of consequence and likelihood to an event in order to determine the level of risk.
Risk Assessment	The systematic process of identifying, analysing and evaluating risk.
Risk Evaluation	The process of comparing the outcomes of risk analysis to the risk criteria in order to determine whether a risk is acceptable or tolerable.
Risk identification	The process of recognising, identifying and describing risks.
Risk Register	A component within the BRMS used to record, review and monitor risk assessments and treatments associated with assets recorded in the BRM Plan.
Risk Treatment	A process to select and implement appropriate measures undertaken to modify risk.
Rural	Any area where in residences and other developments are scattered and intermingled with forest, range, or farmland and native vegetation or cultivated crops.
Rural Urban Interface (RUI)	The line or area where structures and other human development adjoin or overlap with undeveloped bushland.
Slope	The angle of the ground's surface measured from the horizontal.
Tenure Blind	An approach where multiple land parcels are considered as a whole, regardless of individual ownership or management arrangements.

Treatment	An activity undertaken to modify risk, for example a prescribed burn.
Treatment Objective	The specific aim to be achieved or action to be undertaken, in order to complete the treatment. Treatment objectives should be specific and measurable.
Treatment Manager	The organisation, or individual, responsible for all aspects of a treatment listed in the *Treatment Schedule* of the BRM Plan, including coordinating or undertaking work, monitoring, reviewing and reporting.
Treatment Planning Stage	The status or stage of a treatment as it progresses from proposal to implementation.
Treatment Priority	The order, importance or urgency for allocation of funding, resources and opportunity to treatments associated with a particular asset. The treatment priority is based on an asset's risk rating.
Treatment Schedule	A report produced within the BRMS that details the treatment priority of each asset identified in the BRM Plan and the treatments scheduled.
Treatment Strategy	The broad approach that will be used to modify risk, for example fuel management.
Treatment Type	The specific treatment activity that will be implemented to modify risk, for example a prescribed burn.
Vulnerability	The susceptibility of an asset to the impacts of bushfire.

9. Common Abbreviations

AFAC	Australasian Fire and Emergency Services Authorities Council
APZ	Asset Protection Zone
BFAC	Bush Fire Advisory Committee
BRM	Bushfire Risk Management
BRM Branch	Bushfire Risk Management Branch (DFES)
BRM Plan	Bushfire Risk Management Plan
BRMS	Bushfire Risk Management System
BRPC	Bushfire Risk Planning Coordinator
CALD	Culturally and Linguistically Diverse
CBFCO	Chief Bush Fire Control Officer
CEO	Chief Executive Officer
CESM	Community Emergency Services Manager
DBCA	Department of Biodiversity, Conservation and Attractions
DFES	Department of Fire and Emergency Services
DPLH	Department of Planning, Lands and Heritage
EPBC Act	Environmental Protection and Biodiversity Conservation Act
FCO	Fire Control Officer
FDI	Fire Danger Rating
FFDI	Forest Fire Danger Index
FMP / BMP	Fire Management Plan / Bushfire Management Plan
FPC	Forest Products Commission
GFDI	Grassland Fire Danger Index
GIS	Geographic Information System
HSZ	Hazard Separation Zone

JAFFA	Juvenile and Family Fire Awareness
LEMA	Local Emergency Management Arrangements
LEMC	Local Emergency Management Committee
LG	Local Government
LMZ	Land Management Zone
MoU	Memorandum of Understanding
OBRM	Office of Bushfire Risk Management
PEC	Priority Ecological Community
PWS	Parks and Wildlife Service
SEMC	State Emergency Management Committee
SLIP	Shared Land Information Platform
TEC	Threatened Ecological Community
UCL	Unallocated Crown Land
UMR	Unmanaged Reserve
WA	Western Australia
WAPC	Western Australian Planning Commission

10. Appendices

10.1. Communications Strategy

10.2. Local Government Wide Controls Table

SoPJ BRM Plan - Final

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